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Preparation of an Inventory of Research Work Undertaken in Agricultural / Rural Sector in Kenya

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1.0 Introduction

Kenya's economy continued to perform below its potential during the 1990s. Since 1997, growth has averaged only 1.3%, consistently below the rate of population increase estimated at 2.4% per annum. Consequently, per capita income in constant 1992 prices has declined from US$271 in 1990 to US$239 in 2002. In addition, agricultural productivity has been on the decline, competitiveness eroded and international financial support diminished. During this period, poverty and food insecurity have increased. This poor performance corresponds with the time when the economy has been undergoing major transformations. Wide-ranging trade and macro-economic policies that impact on production costs, incentive structures, and the competitiveness of different sectors are at various stages of implementation. At the same time, regionalization and globalization have exposed domestic production and trade to fierce regional and international competition. One outcome of these changes has been lower and more volatile prices for key commodities.

Reasons for the weak economic performance and high incidence of poverty include the persistence of pervasive governance failures, the slow pace of economic reforms, low savings and investment, a weak banking system, intermittent shortages and rising energy costs, and poor physical and telecommunication infrastructure, together with an inward looking trade regime that has protected industries from international competition. The continued high fertility rate and the burden of disease — particularly HIV/AIDS, where the infection rate reached 13.5% of the adult population in 2000, and malaria — are also contributing to the slow growth rate by keeping the dependency ratio high.

The performance of Kenya's agricultural sector during this period generally mirrored the poor performance of the economy. Agriculture grew at a rate of 4.7 percent between 1963 and 1975 largely due to area expansion and increases in yields following the adoption of high yielding maize and wheat varieties and agronomic research in tea and coffee. This period was also characterized by the rapid growth of the sector fuelled by heavy government expenditure and donor involvement in provision of subsidized services and inputs. Agricultural growth rate dropped between 1976 and 1980 due to various factors including the oil shocks of 1973 and 1979 and fluctuations in international commodity prices of key agricultural exports like coffee and tea. The growth rate has since then been on a declining trend to the extent that it was about –2.4 percent in 2000, -1.2% in 2001, and 0.7% in 2002. During 2003, agriculture grew by 1.5%,
Average annual agricultural GDP growth therefore fell from 3.5 percent during the 1980s to 1.0 percent during the 1990s and has remained below 2% since 2000.

Consequently, the proportion of the population living in poverty rose from 48.8% in 1990 to 51.4% in 1997, 55.4% in 2001, and is estimated to have increased further to 56% in 2003. Majority of the poor households cannot adequately meet their needs such as health, education, housing, food security or income generating activities. The Millennium

Development Goal objective of cutting the proportion of Kenyans living in poverty in 1990 by half by 2015 therefore appears unlikely to be achieved.

External factors such as declining global agricultural commodity prices and vulnerability to climatic shocks explain part but not the entire decline. Domestic policy shortcomings created distortions in input and output markets and inadequacies in the legal and regulatory framework raised the cost of doing business. The poor state of infrastructure has led to increases in marketing costs. High incidence of HIV/AIDS has contributed to reduce labor productivity and a dysfunctional public support services system slowed the renewal of agricultural technology. The end result has been increased rural poverty and food insecurity, decline in competitiveness, and reduction in both private and public investment in the agricultural sector.

Partly because of the expected improved policy environment under the new government, elected in December 2002, the potential for economic growth is considered greater than the poor performance of the 1990s suggests. Although the new government inherited a weak fiscal position, strong monetary management in the 1990s produced low inflation and a stable exchange rate. The government has launched two policy documents to resuscitate the economy; the *Economic Recovery Strategy for Wealth and Employment Creation* (ERSWEC – June 2003) and the Strategy for the Revitalization of Agriculture (SRA – March 2004); the latter is a policy document aimed at transforming agriculture into a profitable commercial activity capable of attracting private sector investment and providing gainful employment to the population. The strategy identifies key factors that continue to hamper growth of agriculture. The main objective of SRA is "to provide a policy and institutional environment that is conducive to increasing agricultural productivity, promoting investments, encouraging private sector involvement in agricultural enterprises and agribusiness." This process, and the ensuing reforms, will need to be informed and guided by well-grounded analysis of policy options in terms of their economic and social implications.

The poor performance of the economy and the development of the various national policy documents for reviving the economy have taken place against a background of various political and economic transformations. Over time, the country has developed a large volume of analytical and empirical work already done or ongoing on various policy issues of concern in Kenya's rural and agriculture sector. At the local level, organizations such as Tegemeo Institute, Kenya Institute of Public Policy Research Analysis (KIPPRA), Institute of Policy Analysis (IPAR), Egerton University, African Economic Research Consortium (AERC), Institute of Development Studies (IDS), and University of Nairobi's Department of Agricultural Economics have conducted various studies on policies in the country's rural and agricultural sector. At the regional level, ASARECA and ECAPAPA have contributed to the stock of knowledge on policy and strategy formulation on the region including Kenya. The International Livestock Research Institute (ILRI), the International Centre for Research in Agro Forestry (ICRAF) or the World Agro forestry Centre has also made contributions at the international level. Non Governmental Organizations (NGOs) and the donor community, either directly through consultant or indirectly by working with the policy research institutes, have also been involved in policy research and analytical work in rural development in Kenya.

Much of this large volume of analytical and empirical work however, remains scattered and unknown not only to policy makers but also to other would-be users. Consequently, there is need to synthesis these analytical and empirical input to benefit policy and strategy formulation and other users in rural and agricultural sectors of the economy. It is also important to take stock of the knowledge base that already exists so as to avoid duplication and identify areas where more work is needed to fill the gaps. In Kenya, the large volume of analytical and empirical work that has been done is not widely/readily available to existing and potential users. The existing gaps are not well defined to assist in the formulation of further policy research areas to support implementation of various government strategies, programs and projects.

2.0 Purpose and Objectives of the Study

The objective of this study is therefore to take stock or review the existing body of knowledge, distil the main policy issues and findings, and to identify the analytical gaps. The findings and lessons from research will feed into the ongoing debates and policy formulation, and the identified knowledge gaps will help formulate the immediate and long term agricultural policy research agenda. The World Bank will use the results from this inventory to formulate its economic and sector work (ESW) in the rural sector to underpin its policy dialogue and lending program in Kenya. The inventory and the identified gaps will also assist the government in identifying policy research areas to support the implementation of the SRA. The inventory shall have a broad audience among the stakeholders and the donor community active in the sector. The inventory will be posted on a regularly up-dated web site for wider access.

3.0 Specific Terms of Reference

The study will review the annotated bibliography of existing and ongoing agriculture and rural development related analytical and empirical work undertaken in the recent past (5 years or so) covering:

- Agricultural input and output markets, risk management, access to finance, infrastructure, land and water.
- Institutional reform with specific reference to parastatal reform in the agricultural input and output market
- Synthesize the main findings and results and draw policy implications identified in the input-output markets
- Identify analytical gaps for addressing outstanding policy and institutional issues for further analytical work
- Identify the major contributors to agricultural policy debates

4.0 Methodology

Information was gathered through extensive research that involved initially identifying the key institutions involved in carrying out the various activities. Institutions identified included KIPPRA, IPAR, Tegemeo, Michigan State University, IDS and Department of Agricultural Economics (University of Nairobi), ILRI, ICRAF, AERC, USAID, DFID, World Bank, European Union and the NGO community and ECAPAPA were identified as the main contributors to this area of policy research and analysis.

The second stage in the information gathering involved visiting the Websites of these institutions and delineating the various papers related to the topic. Papers were downloaded depending on their access. The final stage in data gathering involved conducting the key informant interviews within some of the organizations identified as the major contributors to the area of agriculture and rural sector in Kenya. The information gathered was used to develop the bibliography. A review of key contributions to the topics was also done and key results and findings highlighted. Analytical gaps were then identified and major gaps in priority areas where further analytical work need to carry out was also noted.

5.0 Input Markets

Agricultural input markets in Kenya have been largely liberalized. However, market liberalization has not raised incomes for farmers as earlier anticipated. The dominance of parastatal in the processing and marketing of agricultural produce has inhibited the development of efficient private sector led input markets. This is complicated further due to lack of adequate infrastructure compounded by administrative and legal impediments. On the input markets, farmers have been unable to access quality seeds, fertilizers, pesticides, and other services at competitive prices.

The key inputs in agricultural production are seeds, fertilisers, pesticides and chemicals, machinery services, animal feeds, and inputs into animal health and production. These inputs are important in influencing agricultural productivity at the farm level. The supply of these agricultural inputs is unreliable and the distribution network inefficient. Prices are high and quality is low as farmers complain of input adulteration in downstream markets by unscrupulous traders. The cost of machinery services is high and sometimes not available on time. These problems must be alleviated to improve the productivity and competitiveness of Kenyan agriculture.

5.1 Seeds and Planting Materials

The seeds industry in Kenya is better developed than are those of other countries in the region with respect to quality of research and adherence to international standards

5.1.1 Key Policy issues

- A number of private companies have been registered to compete with Kenya Seed Company Ltd (KSC), which was a private seed company with some government ownership. Despite this liberalization process and the high expectations of improved accessibility to seed by farmers and hence increased efficiency, productivity is at its lowest. Availability of quality seed is still low and agricultural productivity has declined.
- A large proportion of farmers have adopted hybrid seeds although there are some who still use the open pollinated and traditional varieties even within the high potential zones.
- Increasingly farmers are recycling the hybrids mainly due to poor quality and high seed prices
- A near monopoly situation has developed where, for example, KSC supplies nearly 90 percent of the hybrid seed maize used in the country.
- Formerly, a Memorandum of Understanding (MoU) between Kenya Agricultural Research Institute (KARI) and KSC, in which seed varieties developed by KARI were exclusively released to KSC, made it difficult for other seed companies to access the improved seed varieties for propagation. Although the MoU between KARI and KSC is no longer enforced, rigorous enforcement of certification processes by Kenya Plant Health Inspectorate Service (KEPHIS) makes it difficult for other firms to enter the industry. However, this rigorous process is not evident in ensuring quality certified seed reaches the farmer; cases of fake seed are cited every season.
- The prevailing conditions have discouraged investment in the seed sector;
- High prices for improved hybrid seed varieties from existing seed companies

5.1.2 Research gaps relevant to policy

- What are the modalities for attracting additional private investment and thereby infuse competition, offer farmers a wider range of choice of quality seeds, and ultimately create conditions for reduction in seed prices.

- How can a private-public sector partnership in seed development and distribution be encouraged to transform KEPHIS from being a regulator to a facilitator;
- What are the modalities of introducing self-regulatory systems in the seed industries?

- What are the modalities for accreditation of agencies for testing of seeds and other plant materials and that of seed producers?

- How do we ensure that farmers access seeds in small packages (sort of pro-poor policy) while also guarding against seed adulteration and contamination?

- How to harmonize regional seed policies, regulations, etc to facilitate trade and investment.

5.2 Fertilizers

Kenya liberalized her fertilizer sub-sector in 1992. The development of the fertilizer sub-sector in Kenya over the last decade is a testimony of the capacity of the private sector to respond to opportunities. On the other hand it demonstrates the negative impact of inefficient facilitative services on transaction costs and eventually on prices. Currently the private sector handles over 95% of all fertilizer imported into the country. Apart from the import trade, with only about 10 active participants, competition is alive in all the other levels of the supply chain. Currently there are over 500 wholesalers and about 5,000 stockist/retailers. The government through the National Cereals and Produce Board started to engage in the fertilizer trade since 2002 first as a stockist and currently as an importer as well. This intervention has since expended to include fertilizer importation. In the 2004 planting season, the government, through the NCPB, has initiated the process of importing about 40,000 tons. The government is also in the process of reviving the Kenya Farmers Association (KFA) as a farmers organization to take up bulk imports, distribution and retail of fertilizers in Kenya. These new interventions, once implemented, could discourage private sector investment in fertilizer trade in the country.

5.2.1 Key Policy Issues

- The Private sector currently handles 95% of all imports (10 importers). Previously fertilizer imports were the preserve of government-run and semi-private bodies (eg KFA). Potential fertilizer consumption in Kenya is estimated at 1 million tonnes with actual annual consumption at about 30%. Usage of fertilizer is determined by agricultural sector performance, extension, and collapse of credit schemes, roads, and seasonal demand.
- Fertilizer market is characterized by some oligopolistic practices in the industry where although there are more than 40 registered fertilizer importers, only 10 have the capacity to handle more than the economic shipload of 25, 000 tonnes. There are also many middlemen in the distribution chain
- Fertilizer industry has a very competitive distribution system with 500 wholesalers and 5000 retailers/stockists with three distinct channels – private importers and private distributors/retailers, farmer organizations and large-scale farmers importing directly. Some NGOs also do direct purchases and there is also an intra-industry active trade on reformulated fertilizers (by Athi River Mining (ARM)). KTDA and the government import 70,000 and 20,000 respectively annually.

- The fertilizer market is characterized by high differentials between landed cost of fertilizer imports and retail prices at the farm-gate and instances of adulteration and quality deterioration.
- Currently the government through the NCPB has entered into the fertilizer market and has brought some confusion into the industry. The issue of subsidized fertilizer going directly to farmers has brought fears of interference in a private sector-led trade by government. The belated attempt by NCPB to intervene in the market has further destabilized the fertilizer market

5.2.2 Research gaps relevant to policy

- Fertilizer market transaction study to determine margins at different levels and possibilities of reducing fertilizer prices at the farm gate
- Study on Structure, Conduct and Performance of the fertilizer market to assess the extent of oligopoly and accusations of cartel-like price fixing
- Logistics of producing smaller packages that are affordable and convenient for small holders with either small acreages or financial constraints (2kgs, 5kgs), without compromising quality.
- Private-public sector roles in fertilizer marketing
- Modalities and mechanisms of self regulation in fertilizer marketing
- Harmonization of fertilizer policies and regulations among the Eastern African countries to help establish a common regional market large enough to induce the needed investment and create competition to establish a viable and buoyant fertilizer market in the region.
- Viability of private sector investment in soil analysis to enhance efficiency of fertilizer use
- A study on the role of information and extension services in fertilizer market development.

5.3 Machinery

Machinery services are estimated to constitute about 30-40 percent of the cost of production for large-scale farmers. Farmers have also complained that the ownership of farm machinery has reduced in the last 10 years due to lack of financing mechanism for procurement of farm machinery. High costs of farm machinery thus have affected the quality and timeliness of farm operations such as land preparation in the key maize production zones. The high costs of farm operation have forced farmers to reduce the quality of seedbed preparation. Reduction in the quality of land preparation thus could have adversely affected yields particularly that of maize and wheat and hence an increase in production costs per unit of produce.

There are however few studies on policy issues pertaining to machinery costs and impact on agricultural sector.

5.3.1 Key Policy Issues

- Limited availability of farm machinery thereby raising costs and affecting timeliness of land preparation. This is particularly so for small-scale producers whose use of mechanization is low due to small farm sizes and the high cost of private machinery services.
- Although farm machinery are zero-rated for duty and VAT, spare parts and diesel are not.
- Government should consider reducing or eliminating import duty on agricultural spare parts to reduce equipment maintenance costs and improve farmers' net receipts. With appropriate tools, small-scale farmers could increase efficiency and ease seasonal labor constraints. The government should encourage universities and village polytechnic institutes to do research on appropriate technology and tools for use by small-scale farmers. Immediate areas that could benefit from such development include crop storage, food preservation, and processing.
- Modalities of reducing duty and VAT on machinery spare parts and diesel that are used by both farm and other service machinery.
- What is the role of government in facilitating efficient machinery use? Currently, the government is preoccupied with promoting a moribund government owned and run Agricultural Machineries Services (AMS).

5.3.2 Research gaps relevant to policy

- What are the possibilities of introducing technologies that are affordable and appropriate to different farm sizes; small scale machinery-ox-plough, small tractors, etc.
- A study on land policy vis a vis machinery; effect of subdivisions on machinery use.

6.0 Risk management

Majority of rural households are risk averse and their welfare (both as producers and consumers) is adversely affected by both price and production risks. Performance risks associated with marketing institutions and asymmetric information tend to amplify these risks. The volatility of traded commodities such as coffee and tea has increased with liberalization, mainly due to instability of the exchange rate and volatility of international commodity prices. The removal of price controls and the reduction in marketing boards' role in stockholding coupled with limited ability of private traders to hold inventories, have also resulted into short- and medium-term increase in volatility of producer food (mainly cereals). Inability of farmers and private traders to invest in supply management is a critical factor that will continue to determine the level of food price instability and inter-regional price spreads. Pastoral communities are also known to face major price and weather related risks, which affect their livelihoods.

Rural households can however manage (mitigate) some, if not most of the risks, through participation in rural financial markets (to smooth their consumption), through on-farm diversification and through participation in off-farm activities. These results therefore emphasize the need to focus more on policies that can enhance investments in supply management e.g. storage, and promotion of market-based risk management instruments. These market-based instruments e.g. put option and warehouse receipts, cannot only stabilize prices but will also enhance credit supply. These instruments will also reduce the need for public administered guaranteed minimum return (GMR) programs which are prone to abuse and distortions in the market.

6.1 Key Policy Issues

- The volatility in markets of traded commodities such as coffee and tea has increased with liberalization, mainly due to instability of the exchange rate and volatility of international commodity prices.
- The removal of price controls and the reduction in marketing boards' role in stockholding coupled with limited ability of private traders to hold inventories, have also resulted into short- and medium-term increase in volatility of producer food (mainly cereals).
- Most commodities have no mechanisms for trading in futures or hedging for risks.
- There is need to focus more on policies that can enhance investments in supply management e.g. storage, and promotion of market-based risk management instruments. These market-based instruments e.g. put option and warehouse receipts, cannot only stabilize prices but will also enhance credit supply. These instruments will also reduce the need for public administered guaranteed minimum return (GMR) programs which are prone to abuse and distortions in the market.

6.2 Research gaps relevant to policy

- Legislative requirements for stimulating market-based risk management instruments like warehousing receipts, futures and options etc
- Effects of market liberalization on some of the market based risk management instruments such as warehousing receipts and imports
- Modalities of establishing national and regional commodity exchanges and their viability
- Modalities of establishing instruments such as crop insurance and forward contracts
- The Kenya Commodity Exchange is a case in point though it has not gained a lot of ground so far. Part of the reason is the relatively underdeveloped exchange markets and also dependable legal framework and information flow to all parties. This is also a concept that is relatively new and not understood by lots of producers.

- Quantification of the cost of price/production risks faced by smallholder farmers and pastoralists in the country remains a major gap. This needs to be filled in order to inform policy on the affordability of various types of insurance. The analytical work should also explore the best intuitional arrangements that can be used in `the country to enhance the use of market based risk management instruments and the linkage to rural financial markets.
- One other researchable area is the need to find out why the GMR scheme failed in Kenya. However, some studies on the failure of supply-driven and subsidized lending schemes have been carried out elsewhere in Africa. If GMR needs to be re-introduced to cover yield and price-related risks then it can be tried on a pilot basis before replicating it elsewhere.
- Further work on the risk exposure to food crop growers in the country is also needed as this is currently lacking.

7.0 Access to Finance

Micro Finance Institutions (MFIs) in Kenya have increased in recent times, they have managed to cover only 200,000 households out of about 5 million households in Kenya Some of the findings reflect on success stories of some Rural Finance Institutes (RFIs) in rural sector whom have come up with innovative products like mobile or electronic banking. Innovations geared to fitting into the socio-economic environment that exists has also been a plus; finding way and means of extending services even with a less developed regulatory framework - joint liability groups and obligatory savings to overcome collateral and enforcement constraints. The major problem with agricultural credit is the poor recovery of loans.

The problem with state-owned RFIs like AFC is their supply-driven targeted credit programs that eventually do not benefit poor smallholders of the rural economy; most of the unrecoverable loans were extended to large-scale farmers. A successful rural financial market requires demand-driven, savings-led, and viable RFIs; this can only be achieved in an open market where some participants do not have undue advantage.

7.1 Key Policy Issues

- Role of AFC compared to other MFIs. How will the subsidized AFC credit impact on development of RFIs?
- Role of RFI such as village banks
- Legislation either MFI bill, SACCO bill and their impacts on access to rural finance
- Lending to Agriculture compared to Non agricultural activities
- Success factors for MFIs

7.2 Research gaps relevant to policy

- What is the public sector role in the provision of financial services such as in Agricultural Finance Corporation
- Product development/innovations; can mobile or electronic banking work in the rural sector?
- What services should be offered by RFIs in agriculture without using land as collateral? The K-REP example of group lending can be a prime candidate for study here.
- What lessons can be learned form other countries; international experiences particularly on state parastatals doing business side by side with private sector with "subsidized" public funds.
- Distinction between lending for agricultural and non-agricultural use by household**s**
- Agricultural credit is low due to the poor recovery of loans.

8.0 Infrastructure

Kenya's inefficient and dilapidated infrastructure discourages new investments and significantly reduces productivity and the profitability of the existing farms and business. The rural areas suffer from inadequate physical infrastructure that therefore hampers growth in the rural economy. Poor infrastructure hinders rural development. The rural access roads have particularly adversely affected agricultural productivity. Most roads in agricultural areas are impassable, especially during the rainy season. As a result, the potential in a number of high rainfall areas remain untapped. It also results in heavy losses due to wastage in the farms and deterioration of quality of the produce during transportation to the market. Furthermore, poor road network increases transportation costs for inputs and the produce thereby reducing the margins to farmers. Besides leading to wide regional price variations within the country, poor road network adversely affects the competitiveness of Kenyan produce in both the local and the international market. Telecommunication services also are inadequate, expensive and unreliable. This has hampered quick and efficient flow of information to farmers, traders, and other investors in the rural areas. Even where this is in place, it is out of order most of the time rendering it useless to investors. Similarly, electricity supply in the rural areas is inadequate thus limiting agro processing in these areas.

A critical factor that affects output markets is the state of physical infrastructure, such as roads, market centres, and secure storage facilities. Perishable commodities, such as milk, meat and fish may lead to farmers and fishermen incurring heavy losses through spoilage or exploitative prices by purchasers who wait until farmers are desperate so that they can buy produce at low prices.

8.1 Key Policy Issues

- Heavy losses due to wastage in the farms and deterioration of quality of the produce during transportation to the market.
- Poor road network increases transportation costs for inputs and produce thereby reducing the margins to farmers.
- Poor road network reduces access to markets
- Telecommunication services also are inadequate, expensive and unreliable.
- Poor Telecommunication hampers quick and efficient flow of information to farmers, traders, and other investors in the rural areas.
- Inadequate electricity supply in the rural areas which limits agro processing

8.2 Research gaps relevant to policy

- Impacts of poor infrastructure on production costs and competitiveness
- Influence of poor infrastructure on enterprise mix and choice
- Least costs method for improving rural infrastructure
- Relationships between infrastructure and Technology adoption by SMEs

9.0 Land

Land issues have not been well studied and the existing literature is on areas and utilizations. Land is the most important asset in Agriculture. Inequality in land distribution has been found to negatively affect economic growth. Kenyan land exists under different tenure systems.

9.1 Key Policy Issues

- Land tenure/titles
- Credit/finance – how land markets are linked with financial markets (collateral) and labor markets (off-farm activities playing a bigger role with larger families and small farm units); possible linkages and areas of further research.
- Amalgamation/consolidation Vs subdivisions – the issue of the optimal size of landholding for economic efficiency is worthy looking at here
- Soil fertility – has a quality measure – for increased productivity with other input intensification;

9.2 Research gaps relevant to policy

- What are the most promising strategies for increasing land productivity by small-scale farmers?

- Are there possible multiplier effects that create demand for off-farm and rural non farm jobs and is it the most realistic ways for alleviating rural poverty
- Are there alternative strategies for redressing the acute land constraints faced by many rural populations?
- Are the land markets working well and if so where? What lessons can be learned?
- Should idle land be taxed and if so what land redistribution mechanisms could such a tax introduce?
- Is there potential for land redistribution between state, large-scale and small-scale farmland?
- Are there cost effective public investments that could induce migration into relatively sparsely populated areas and thereby support rural productivity?

10.0 Water

Rural water supply in is essential for both human and livestock development. Water sources particularly those in the ASALS areas and would involve the rehabilitation and establishment of water pans, dams and boreholes.

Water conservation focuses on assisting the government to implement the Water Act 2002 which has inter alia provisions for water resource management by river users associations; the main issue is to increase the availability of water for downstream users; run off water harvesting for small scale household irrigation; impending of water in holes and quarry excavations to increase ground recharge.

Irrigation rehabilitation also has considerable scope particularly that of large irrigation schemes previously under cotton and rice production and even of some small schemes; particular attention would need to be given to establishing a participatory management structure to avoid recurrence of the abandonment of the schemes; the other aspect which is critical is the financial and economic viability of proposed projects in this area.

10.1 Key Policy issues

- Cost effective rural water supply
- Water conservation measures and their financial and economic returns
- Large and small-scale irrigation rehabilitation
- Erosion / environmental sustainability issues; The interrelationship between land and water; run-off into rivers and streams-industrial effluent, fertilizer run-off into water sources, health concerns/effects

10.2 Research gaps relevant to policy

- Costs/benefit ratio of small scale irrigation
- Sustainable water use and management systems
- Water user associations

- Relationship between productivity and land tenure
- Optimal size of landholding for economic efficiency

11 Output Markets

Agricultural output markets are the mostly widely studied section in this study. Agricultural output markets in Kenya have been largely liberalised. Some of the cross-cutting objectives of these reforms were to enhance productivity, raise the level of production of basic food commodities to their potential; improve quality and standards of products and diversify exports leading to high economic growth. However, market liberalisation has not led to improved incomes for farmers mainly due to the decline in agricultural terms of trade for key commodities as well as corruption and mismanagement in cooperatives and parastatals agencies involved in the production, processing, and marketing of key agricultural commodities. The dominance of parastatal in the processing and marketing of agricultural produce has inhibited the development of efficient output markets. Poor and dilapidated infrastructure and administrative and legal impediments have also compounded the price distortions caused by parastatal involvement. Multiple taxation of agricultural produce across administrative boundaries is a common disincentive to agricultural trade.

11.1 Key Policy Issues

- High domestic production costs
- Limited access to rural finance
- Poor and inaccessible rural roads
- Poor quality of inputs that is most often contaminated and adulterated
- Limited access to market information which often could be asymmetrical
- Liberalization of key sub sectors such as pyrethrum industry
- Remodeling agricultural research and extension: to strengthen the link between farmers' demands, extension provision and the direction of research.
- Improvement of financial service through encouraging options to deepen the financial credit market for small agricultural borrowers.
- The cooperative sector plays a role in input acquisition, credit supply, and output processing and marketing in a number of commodities taking into accounts their mismanagement of the cooperatives that has led to losses transmitted to farmers in form of depressed prices. How can the governance of the farmers' organizations be increased?

- Private-public sector partnership exists that could promote efficient output marketing.
- Lobby and interest groups that strive to change policies in favor of either farmers or other private entities.
- Legal reforms

- Value adding
- Diversification of output mix and markets

11.3 Research gaps relevant to policy

- How can we Strengthen farmers' bargaining capacity by forming farmers groups where they do not exist;
- How do we improving governance in farmers' organizations;
- What role should the government parastatals play in major output markets? Some of these parastatals account for a large portion of the budgetary allocations. The role of NCPB, KCC, and revival of KMC are some of the issues that should be tackled in a carefully calculated manner to reduce confusion and encourage private investment. The recurring question centers on defining the role of state versus private sector.
- The revival of AFC and the planned feasibility study on reviving KMC have brought to the fore the question of public and private roles in economic development.
- To what extent does the infrastructure affect the efficiency of agricultural output markets? To what extent does poor roads, inadequate cooling facilities, and other infrastructure services, affect competitiveness and the overall producer prices.
- Whose role is it to provide intelligence and market information, is it a private or public sector role.
- How can we improving farmers access to markets by removing impediments to movement of commodities and livestock;
- Can the value chains be shortened to improve net receipts to farmers?
- Creating market-driven opportunities for agro-processing and value addition
- How can we hasten the legal reform in most commodity markets to encourage faster private sector response to economic reform?
- Impact of duties/taxes on inputs and outputs on agricultural production? What of non-tariff constraints? Quotas, preferential trade blocks (EEC, COMESA, EAC).

12.0 Institutional Reform

Due to the nature and history of Kenyan political economy, the government has until recently, continued to play a big role in the sector through the parastatals. Once the wave of liberalization and regional/world trade associations and the accompanying reduction of trade barriers hit Kenya, there has been a drive for a more effective and efficient trade regime that is able to compete internationally. This has led to a re-thinking of the role of government in the sector and hence to the re-structuring of the current system. Parastatals in Agriculture include: Coffee Board of Kenya (CBK), Horticultural Crops Development Agency (HCDA) Kenya Dairy Board (KDB), Kenya Meat Commission (KMC), Kenya Plant Health Inspectorate Service (KEPHIS), National Cereals and Produce Board

(NCPB), Pest Control Products Board (PCPB), Pyrethrum Board of Kenya (PBK), and Kenya Sugar Board (KSA).

Most of the research that touches on Kenyan institutional reform dwells around parastatals reform. The recurring question centers on defining the role of state versus private sector. The revival of AFC and the planned feasibility study on reviving KMC have brought to the fore the question of public and private roles in economic development. The inclusion of AFC in the rural financial market (RFM) brings the problem of unequal competition with privately run rural finance institutions (RFIs) like SACCOs, MFIs, banks, etc. AFC will ostensibly be getting subsidized funds from the government and will be able to offer lower rates thus destabilizing an emergent RFM structure that has started to form.

With liberalization of cereals, dairy, inputs, and other sectors, there has been an emergent structure of private investors and groups (producer and other associations) that is slowly filling the role left by the state. However, due to a long history of state control and lack of complementary interventions (change in state culture) there has been sporadic and ad-hoc pronouncements every now and then from state officials that send confusing signals to markets. Currently, players in the market are confused by statements from MOA, KRA, KSB, and politicians on imports of sugar. There is no clear information on who is in charge of what and whom the public should trust in this.

The state should provide a service or good that will otherwise not be provided or be under-provided by the markets themselves particularly for vulnerable groups (roads, electricity, cold storage facilities, physical market structures such as that at the Wakulima market in Nairobi. If there is no clear case for government intervention, then the parastatal should be abolished or privatized if it is commercially viable.

Some of the potential private sector support initiatives include assistance in the formation of producer groups and industry associations (with help from donors and government) that defend member rights and coordination of activities.

12.1 Key Policy Issues

- Rationalising parastatals in the agricultural sector to delineate those that can be abolished, privatised or retained
- Long term government development philosophy on the private-public sector partnership in agricultural development
- Private-public dialogue, which brings together parastatals service providers with their private sector clients, on an ongoing basis, to identify priorities and constraints;
- Development of new partnerships and networks, based on trust, between parastatals and private sector institutions through which both parties work toward achieving access and adoption goals; and

- Contracting with the private sector for the delivery of some public goods and regulatory functions, building on the comparative strengths of the private sector to ensure value-for-money delivery.

12.2 Research gaps relevant to policy

- Are there living examples of successively run and well-managed parastatals and what is the key to their success: Kenya Airways Model?
- Management of change from parastatal dominated economy to one that is private sector led;
- Legal reform that augments the economic reform that is required to abolish, privatize or deregulate parastatal;

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