REPUBLIC OF KENYA

AGRICULTURAL SECTOR DEVELOPMENT STRATEGY (ASDS)

2009 - 2020

FOREWORD

When the National Alliance of Rainbow Coalition (NARC) took over the running of the affairs of the Government in 2003, we chose, as our top priority, economic recovery because we realized that the country needed to be put back on track. Hence, I promised that my Government would embark on the formulation of a wide range of policies geared towards economic reconstruction and rehabilitation of the collapsed infrastructure and institutions in order to put our economy back on a strong growth path.

In this regard, I launched the *Economic Recovery Strategy for Wealth and Employment Creation* (ERS) in May 2003, with an overall goal of growing the economy to create more jobs and wealth so that we can move our people from poverty to prosperity. In a period of five years, we had revived the economy, growing at a record rate of 7.1 percent in 2007, and created over 1.8 million jobs, resulting in better incomes for our people. Kenya's per capita income had increased from an average US$ 400 in 2002 to an impressive US$ 630 in 2007. A growing economy supplied us with the means to reduce poverty levels by an impressive 10.8 percentage points from 56.8 percent of the population in 2000 to less than half today. Two million people were lifted out of absolute poverty in the five years.

In 2004, I also launched the Strategy for Revitalizing Agriculture (SRA) to build and elaborate on the ERS with respect to the agricultural sector. I am pleased to note that the implementation of the SRA has been largely successful. During this period, the sector surpassed the growth target that we had set of 3.1 percent to reach a high of 6.1 percent in 2007. As we had promised, all agricultural institutions – including those of extension, research, inputs, credit and agro-processing – have been revived. Consequently, the farming community has experienced an impressive turnaround in its fortunes.

In five years, we have increased the prosperity of our farmers by providing them with better prices; for instance, milk prices per kg increased from Kshs 8 in 2002

to an average of Kshs 25 in 2007, while maize prices per 90-kilogram bag increased from Kshs 800 to Kshs 1,300, and coffee incomes increased from Kshs 7 to Kshs 30 per kg. In summary, prior to 2008, agriculture had been revitalized and was on the path to further development. Kenyan farms and firms were successful and confident of the future.

However, the growth trend was interrupted in 2008 by external factors of post-election violence, global food crises, global escalation of fuel, fertilizer prices and global financial crises. The effect of these factors was further aggravated by drought and erratic rainfall in most parts of the country over the last two years.

Despite these challenges, I am confident that the commitment of all Kenyans guided by the Vision 2030, agriculture will rebound to growth since all the foundations that were generating growth in 2007 are still in place. The new Agricultural Sector Development Strategy (ASDS) is a step in this direction. The strategy is a testimony of the teamwork of the sector ministries and the Government's commitment to our farmers and rural people. It will position the agricultural sector as a key driver for delivering the 10 percent annual economic growth rate envisaged under the economic pillar of the Vision 2030. It will also provide a guide for the public and private sector's effort with regard to the development challenges facing the agricultural sector.

As the backbone of our economy, the sector's Vision of "Food Secure and Prosperous Nation" is not only appropriate, but also in tandem with our Vision 2030 of 'A Globally Competitive and Prosperous Nation'. Besides ensuring food security and nutrition for all Kenyans, the sector is also expected to generate income and employment especially in the rural areas. In this regard, I am pleased to note, in accordance with the sector's Mission to have "An Innovative, Commercially-oriented and Modern Agriculture", that we expect the sector ministries to ensure that farmers, producers, processors and marketers of agricultural produce will employ the most contemporary methods and technologies. Farming enterprises will function as commercial entities that can not only produce food, but also generate income so that poverty will be eradicated among our people. This will require that all agricultural commodities and enterprises are highly productive, commercial in nature and competitive at all levels. We will also need to develop and manage our factors of production such as land, water, inputs and financial credit so that our cost of production is within international standards.

We are, therefore, setting the following targets for the sector to achieve by 2020: (i) the sector must significantly contribute to reduction of the number of people living below absolute poverty lines to less than 25 percent, thereby achieving the Millennium Development Goals (MDGs) of the United Nations; (ii) the sector must play a key role in reduction of food insecurity by 30 percent to surpass the level set in the MDGs; and, (iii) we expect the sector to contribute an additional Kshs 80 billion per year to the GDP as set out in the Vision 2030.

To achieve these targets, as a Government, we shall divest from production, processing and marketing functions where we believe the private sector is better placed to achieve growth. In addition, we will, however, invest in building the capacity of the private sector so that there is proper sequence to avoid any vacuum. We will also reform and streamline agricultural institutions that provide services to farmers such as extension, training, research and regulatory services so that they are responsive to their needs, as well as efficient and cost effective.

As a result, Kenya's agricultural sector will be transformed into a profitable economic activity capable of attracting private investment and providing gainful employment for our people. We shall institute policy, legal and regulatory reforms so that individual farmers are encouraged to shift from subsistence to market-oriented production and adopt greater use of modern farming practices while increasing integration of agriculture with other sectors in the national economy.

While the completion of this new sectoral strategy is a major step forward, the main challenge is the implementation of the policies contained in it so that they can be transformed into the desired ultimate result; that is, to have a prosperous Kenya without food insecurity. We will be required to drastically change the attitudes and commitment of all stakeholders in this sector, in addition to inculcating a culture of performance and service delivery on all those entrusted with the responsibility of managing this sector. The attitude that farming is basically for survival (subsistence) will need to be changed to that of perceiving agriculture as a business for better incomes and livelihoods.

The Government will create an enabling environment, but to realize our agricultural development objectives, I urge the farming community and the private sector to cooperate and fully participate in the implementation of the strategy. In addition, given that agricultural development is part of the wider

rural development, it will be necessary to coordinate the programmes of the ministries that provide services to agriculture closely.

In conclusion, I wish to state to all that this sector is too important for our economy and our people to be given anything less than the highest level of attention. I wish to urge all stakeholders to rally on the Vision of "A Food Secure and Prosperous Kenya".

Hon. Mwai Kibaki, CGH, MP
PRESIDENT AND COMMANDER-IN-CHIEF OF THE
ARMED FORCES OF THE REPUBLIC OF KENYA

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PREFACE

The Agricultural Sector Development Strategy (ASDS) is the overall national policy document for the sector ministries and all stakeholders in Kenya. The document is an expression of sector characteristics, challenges, opportunities, Vision, Mission, strategic thrusts and the various interventions that the ministries will undertake to propel the sector to the future. In composing this strategy, we have defined the problems in the agricultural sector, explored the possible causes of the problems and proposed possible solutions. Recognizing that we cannot solve all the problems we have selected the best solutions and decided to implement them into operation in a phased manner.

As a revision of the Strategy for Revitalizing Agriculture (SRA), ASDS has incorporated not only the successes, but also the lessons from SRA with the view to provide the framework for stimulating, guiding and directing progressive agricultural growth and development in the next 12 years. Therefore, the document proposes realistic policies and institutional changes that we believe are necessary in contemporary Kenya for creating a vibrant and productive agricultural sector. We expect the strategy to encourage and enhance positive participation among the civil society, individual farmers, farmers' organizations and even the private sector. The interventions and reforms proposed in this strategy are based on the need to achieve transparency, accountability, efficiency and effectiveness in the performance of duties in the agricultural sector.

This strategy can only succeed with total commitment and determination on the part of all stakeholders. We must harness the will and the determination of farmers, processors, the public service, private sector and non-state actors to realize the agricultural potential that this country holds. It is our most sincere hope and expectation that this strategy will not only be a milestone and a guide for the staff of the sector ministries, but also be a landmark and provide direction to all of us who are involved in agriculture as a vital industry. We are convinced that, if successfully implemented, this strategy will return the sector to a growth path to achieve our Vision of "Food Secure and Prosperous Nation" and our Mission of "A Commercially-oriented and Competitive Agriculture".

As Ministers in the sector, we are committed to this Vision. We have set the Mission of the sector as "Innovative, Commercially-oriented and Modern Agriculture" because we believe that farming and related enterprises are some of the most profitable businesses that Kenyans can undertake. Accordingly, we will always remain conscientiously vigilant and focused on this novel Vision and Mission. Our responsibility as a Government is to improve the standards of living and the quality of life of all the people of Kenya. We wish to entrench this principle into the sector as our contribution to Vision 2030 of a fast developing and prosperous Nation.

Hon. William arap Ruto, EGH, MP
Minister for Agriculture

Hon. James Orengo, EGH, MP
Minister for Lands

Hon. Dr. Mohammed Abdi Kuti, EGH, MP
Minister for Livestock Development

Hon. John Michuki, EGH, MP
Minister for Environment and Mineral Resources

Hon. Dr. Paul N. Otuoma, EGH, MP
Minister for Fisheries Development

Hon. Charity Ngilu, EGH, MP
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Hon. Fredrick O. Gumo, EGH, MP
Minister for Regional Development Authorities

Hon. Dr. Noah Wekesa, EGH, MP
Minister for Forestry and Wildlife

Hon. Ibrahim E. Mohamed, EGH, MP
Minister for the Development of Northern Kenya and Other Arid Areas

Hon. Joseph W.N. Nyagah, EGH, MP
Minister for Cooperative Development and Marketing

ACKNOWLEDGEMENTS

We wish to acknowledge the efforts of the technical experts who have made the exercise of compiling this document a success. Although we cannot possibly mention all of them, we will mention a few.

The work of the Interministerial Coordination Committee led by Dr. Romano Kiome – Permanent Secretary MOA and including the following Permanent Secretaries: Mr. Kenneth M. Lusaka - MoLD; Prof. Micheni Japhet Ntiba - MoFD; Eng. David N. Stower - MoWI; Mr. Seno Nyakenyanya - MoCDM; Eng. Carey Orege -MoRDA; Ms Dorothy N. Angote - MoL; Mr. M.A.M. Wa-Mwachai - MoFW; Mrs Mary Ngari - MoSDNKAL and; Mr. Lawrence Lenayapa - MoEMR, is particularly acknowledged.

The compilation role of the Agricultural Sector Coordination Unit (ASCU) and the resource people under the leadership of Dr. Mussolini Kithome is also highly acknowledged.

EXECUTIVE SUMMARY

Agriculture is the mainstay of the Kenyan economy, directly contributing 24 percent of the GDP annually valued at Kshs 342 billion and another 27 percent indirectly valued at Kshs 385 billion. The sector accounts for 65 percent of Kenya's total exports and provides more than 60 percent of informal employment in the rural areas. Therefore, the sector is not only the driver of Kenya's economy, but also the means of livelihood for the majority of the Kenyan people.

Currently the agricultural sector comprises of the following sub-sectors: crops, livestock, fisheries, land, water, cooperatives, environment, regional development and forestry. The sector also includes the development of arid and semi-arid lands (ASAL). Thus, there are many players and stakeholders in the sector due to its role in the economy and its rural-based nature, touching on the livelihoods of many people.

In 2003, the NARC Government developed and launched the ERS, as the blue print for setting the country back on the growth path. The strategy was a shift from previous planning documents that sought to reduce poverty, instead of creating wealth and employment. It elaborates the role of agriculture and recognizes that for the economy to grow to create wealth and employment as the backbone of the economy, agriculture has to grow even faster. Agriculture was, therefore, given high prominence and priority in ERS.

In 2004, the Government developed and launched the SRA as a follow up and response to ERS. The strategy set out the Vision of the Government as "to transform Kenya's agriculture into a profitable, commercially oriented and internationally and regionally competitive economic activity that provides high quality gainful employment to Kenyans". The SRA set the target of agricultural growth at an average annual rate of 3.1 percent during 2003-2007 to reach over 5 percent by 2007.

The implementation of this strategy has over the last 5 years generally been successful. By 2007, agricultural growth had surpassed the SRA target; it was

growing at an average of 5.2 percent reaching a high of 6.4 percent in 2006. Other achievements of SRA include the following: the reduction of food insecurity and poverty by over 12 percent and 10 percent respectively from 2003 to 2007; the increase in the productivity of key commodities such as tea, maize, sugar, horticulture, milk and meat each by an average of over 6 percent per annum from 2003 to 2007; and, the revival of most agricultural institutions. While the foundations for these gains are still intact, the growth trend was interrupted in 2008 by external forces, which included the post-election violence, global food price crises, escalating fuel prices, and the global financial meltdown. It is, therefore, imperative that this interruption is removed so that the sector can go back to the increasing growth path.

The ERS was a five-year plan that was to expire during the financial year 2007/2008. Hence, by early 2007, the Government started developing a new strategy to take over from the ERS. In June 2008, the Government launched Kenya Vision 2030 as the new long-term development blueprint for the country. Its Vision is 'A globally competitive and prosperous country with a high quality of life by 2030'. The Vision 2030 has identified agriculture as one of the key sectors to deliver the 10 percent annual economic growth rate envisaged under the economic pillar.

With the achievement of most targets of SRA and the formation of a new Government in 2008, it became imperative for the revision of SRA to capture these new developments. The new strategy is required to position the agricultural sector strategically as a key driver for delivering the 10 percent annual economic growth rate envisaged under the economic pillar of the Vision 2030. It provides a guide for the public and private sector's effort towards overcoming development challenges facing the agricultural sector.

In the last five years, the sector has been revitalized and placed on a path for further development; hence, this strategy is perceived as an "Agricultural Sector Development Strategy". Although much has been achieved during the period, food security, poverty reduction and transformation of agriculture from subsistence to farming as a business – agribusiness, markets, efficient use of inputs and agricultural credit – still remains a challenge. The ASDS therefore, seeks a progressive reduction in unemployment and poverty and spurs agriculture back to growth trends.

Since the agricultural sector is still the backbone of Kenya's economy – and the means of livelihood for most of the rural population – it is inevitably the key to food security and reduction of poverty. The Vision of the sector is, therefore, "A Food Secure and Prosperous Nation."

The overall agricultural sector goal is to achieve an average growth rate of 7 percent per year over the next 5 years. Given the critical strategic issues that need to be addressed, the strategic Mission for the sector is "An Innovative, Commercially-oriented and Modern Agriculture".

The overall development and growth of the sector is anchored in the following two strategic thrusts:

1. Increasing productivity, commercialization and competitiveness of the agricultural commodities and enterprises and;
2. Developing and managing key factors of production.

Assuming an external environment that is conducive and with support from enabling sectors and factors, the agricultural sector has set the following key targets by 2020:

1. Reduction of people living below absolute poverty lines to less than 25 percent to achieve the first MDG.
2. Reduction of food insecurity by 30 percent to surpass the MDGs.
3. Increase in the contribution of agriculture to the GDP by more than Kshs 80 billion per year as set out in the Vision 2030.
4. Divestiture in all state corporations dealing with production, processing and marketing that can be better done by the private sector.
5. Reforms in and streamlining of agricultural services such as in research, extension and regulatory institutions so as to be most effective and efficient.

The strategic thrust of increasing productivity, commercialization and competitiveness of the agricultural commodities will enable the sector to export more of its output and thereby earn the country foreign exchange and create employment. With the responsibilities of agricultural sector currently spread

in 10 ministries and need for partnerships with several other ministries and stakeholders, implementation of ASDS will require strong partnerships between the Government, private sector, development partners and other non-state actors. Sector-wide approach and strong coordination mechanisms will be instrumental to the success of the strategy.

At the national level there is the biennial National Forum of the stakeholders in the sector, organized by the sector ministries and the Agricultural Sector Coordination Unit (ASCU). The forum will discuss problems constraining progress and ways of overcoming them and consider current and future prospects. In order to give the forum adequate authority, the highest political authority will preside over it.

At the middle level the Inter-Ministerial Coordination Committee (ICC) will be expanded to include all ministries that provide services to the agricultural sector. The Committee will be composed of Permanent Secretaries of the lead and collaborating ministries and be responsible for coordinating the planning of the strategy at the sector level and monitoring its implementation to ensure that its goals are being achieved.

At the local level, ASDS will be implemented through District Agricultural Development Committees (DADC) made up of the Sector Ministries and stakeholders. Priorities on implementation shall be agreed upon at District Development Committees and DADCs, as well as Constituency Development Committees.

ACRONYMS AND ABBREVIATIONS

ABD	-	Agribusiness Development
ADF	-	Agricultural Development Fund
AFC	-	Agricultural Finance Corporation
AGDP	-	Agricultural Gross Domestic Product
ASALs	-	Arid and Semi Arid Lands
ASCU	-	Agricultural Sector Coordination Unit
ASDS	-	Agricultural Sector Development Strategy
CAADP	-	Comprehensive African Agricultural Development Programme
CAHW	-	Community Based Animal Health Worker
CAIS	-	Central Artificial Insemination Service
CBIs	-	Community Based Initiatives
CBO	-	Community Based Organization
CBPP	-	Contagious Bovine Pleuropneumonia
CCPP	-	Contagious Caprine Pleuropneumonia
CDA	-	Coast Development Authority
CDF	-	Constituency Development Fund
COMESA	-	Common Market for Eastern and Southern Africa
CRF	-	Coffee Research Foundation
DAC	-	District Agricultural Committee
DADC	-	District Agricultural Development Committees
DADPs	-	District Agricultural Development Plans
DDCs	-	District Development Committees
DDPs	-	District Development Programmes
DFZ	-	Disease Free Zones
DWFN	-	Distant Waters Fishing Nations

ENNDA	-	Ewaso Ng'iro North Development Authority
ENSDA	-	Ewaso Ng'iro South Development Authority
ERS	-	Economic Recovery Strategy
ESPs	-	Extension Service Providers
EU	-	European Union
FBOs	-	Faith Based Organizations
FMD	-	Foot and Mouth Disease
FTCs	-	Farmer Training Centres
GDP	-	Gross Domestic Product
GIS	-	Geographic Information System
HIV/AIDS	-	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
ICC	-	Inter-ministerial Coordinating Committee
ICT	-	Information, Communication and Technology
IFAA	-	Innovation Fund for Agriculture and Agribusiness
IGAD	-	Inter-governmental Authority on Development
IIP	-	Interim Investment Programme
IMF	-	International Monetary Fund
IUU	-	Illegal, Unregulated and Unreported
KARI	-	Kenya Agricultural Research Institute
KBS	-	Kenya Bureau of Standards
KEFRI	-	Kenya Forestry Research Institute
KEMFRI	-	Kenya Marine and Fisheries Research Institute
KENFAP	-	Kenya National Federation of Agricultural Producers
KEPHIS	-	Kenya Plant Health Inspectorate Service
KEPSA	-	Kenya Private Sector Alliance
KESREF	-	Kenya Sugar Research Foundation
KIRDI	-	Kenya Industrial Research and Development Institute
KMC	-	Kenya Meat Commission
KNBS	-	Kenya National Bureau of Statistics
KNFC	-	Kenya National Federation of Cooperatives
KPCU	-	Kenya Planters Cooperative Union

KSC	-	Kenya Seed Company
KVD	-	Kerio Valley Development Authority
KWS	-	Kenya Wildlife Service
LAs	-	Local Authorities
LBDA	-	Lake Basin Development Authority
LLGSs	-	Local Level Governance and Devolved Structures
M&E	-	Monitoring and Evaluation
MCS	-	Monitoring Control and Surveillance
MoA	-	Ministry of Agriculture
MoCDM	-	Ministry of Cooperative Development and Marketing
MoEMR	-	Ministry of Environment and Mineral Resources
MoFD	-	Ministry of Fisheries Development
MoFW	-	Ministry of Forestry and Wildlife
MoLD	-	Ministry of Livestock Development
MoLS	-	Ministry of Lands
MoRDA	-	Ministry of Regional Development Authorities
MoSDNKAL	-	Ministry of State for Development of Northern Kenya and other Arid Lands
MoWI	-	Ministry of Water and Irrigation
MRLs	-	Maximum Residue Limits
MSF	-	Ministerial Stakeholders Forum
MTEF	-	Medium Term Expenditure Framework
MTFs	-	Ministerial Task Forces
MTI	-	Ministry of Trade and Industry
MTP	-	Medium Term Plan
MTS	-	Multilateral Trade System
NACC	-	National Aids Control Council
NARC	-	National Alliance of Rainbow Coalition
NARS	-	National Agricultural Research System
NASEP	-	National Agricultural Sector Extension Policy
NBA	-	National Business Agenda
NEMA	-	National Environment Management Authority

NEPAD	-	New Partnership for Africa's Development
NESC	-	National Economic and Social Council
NGO	-	Non-Governmental Organization
NIB	-	National Irrigation Board
NIMES	-	National Integrated Monitoring and Evaluation System
PPP	-	Public Private Partnerships
PPR	-	Peste des Petit Ruminants
RDAs	-	Regional Development Authorities
SACCOs	-	Savings and Credit Cooperative Organizations
SAPs	-	Structural Adjustment Programmes
SRA	-	Strategy for Revitalizing Agriculture
STI	-	Science Technology and Innovation
SWGs	-	Sector Working Groups
TARDA	-	Tana and Athi River Development Authority
TB	-	Tuberculosis
TIC	-	Technical Inter-ministerial Committee
TRFK	-	Tea Research Foundation of Kenya
TWGs	-	Thematic Working Groups
UN	-	United Nations
URTI	-	Upper Respiratory Tract Infections
WTO	-	World Trade Organization

1 BACKGROUND

1.1 Agriculture and the Economy

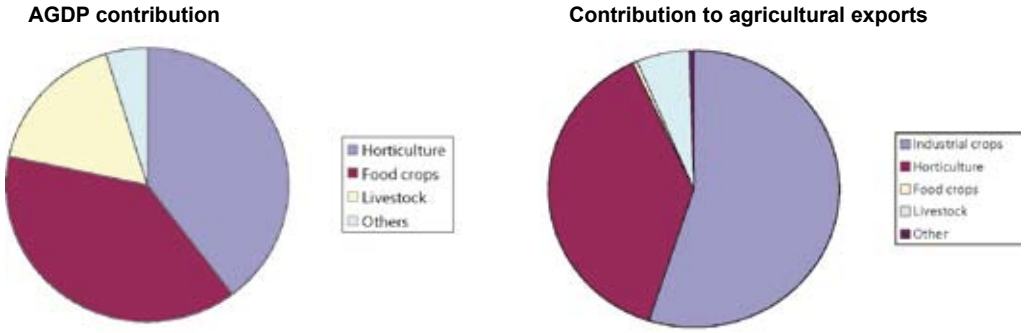
Agriculture is the mainstay of Kenya's economy, currently contributing 24 percent of GDP directly, which is valued at Kshs 342 billion and another 27 percent indirectly, which is valued at Kshs 385 billion. The sector also accounts for 65 percent of Kenya's total exports and provides more than 18 percent of formal employment. More than 60 percent of informal employment is in the rural areas.

The agricultural sector comprises six major sub-sectors, namely (1) industrial crops, (2) food crops, (3) horticulture, (4) livestock, (5) fisheries and (6) forestry, employing such factors of production as land, water and farmer institutions (cooperatives, associations, etc). The contribution of the sub-sectors to Agricultural Gross Domestic Product (AGDP) and agricultural exports are illustrated in Figure 1.1. Industrial crops contribute 17 percent of AGDP and 55 percent of agricultural exports. Horticulture, which has recorded a remarkable export-driven growth in the past 5 years and is now the largest sub-sector, contributes 33 percent of AGDP and 38 percent of export earnings. Food crops contribute 32 percent of AGDP, but only 0.5 percent of exports, while the livestock sub-sector contributes 17 percent of AGDP and 6 percent of exports. Livestock and fisheries sub-sectors have a huge potential for growth which has not been exploited.

In Kenya, growth of the national economy is highly correlated to growth and development in agriculture as shown in Figure 1.2. In the first two decades after independence, the agricultural sector, and in turn the national economy, recorded the most impressive growth in sub-Saharan Africa at average rates of 6 percent per annum for agriculture and 7 percent for the national economy. In this period, small-scale agriculture grew rapidly as the population rallied around the call by the first President of the republic of "Rudini mashambani (go

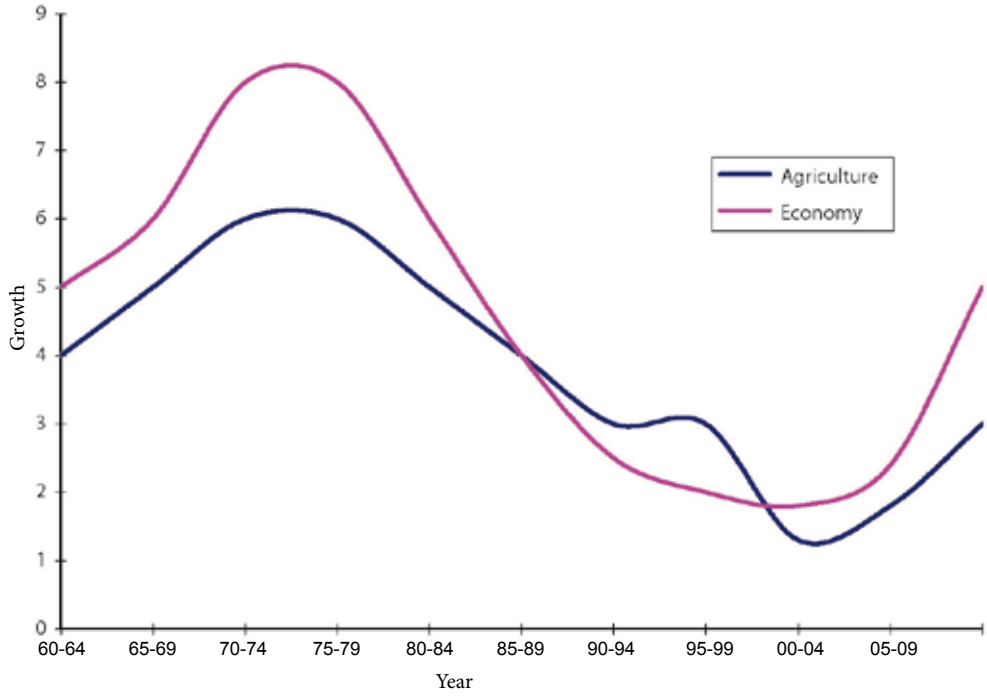
back to the farms)". This growth was spurred by expansion because there was ample land and better use of technology. Moreover, agricultural extension and research were supported by the Government. Also many agricultural institutions – including farmers' cooperatives – agricultural inputs, marketing, credit and agro-processing were established and supported by the Government. Budgetary allocation to the agricultural sector during this period was at an average of 13 percent of the national budget.

Figure 1.1 Contribution of agricultural sub-sectors to AGDP and agricultural exports



However, this growth was not sustained. Between 1980 and 1990 the sector recorded an average annual growth rate of 3.5 percent to an average rate of 1.3 percent in the 1990s. During this period, Kenya compared badly with Tanzania (3.2%), Uganda (3.7%), China (4.1%), India (3.2%) and Vietnam (4.8%), which had been performing badly in the previous decades. The main reasons for this decline were low investment in the sector, mismanagement, virtual collapse of agricultural institutions and, more importantly, negligence of agricultural extension and research. It was also at this period that the Government was implementing Structural Adjustment Programmes (SAPs), prescribed by the Bretton Woods institutions, which encouraged poorly sequenced privatization in the sector. Investment in the sector was at its lowest during this time with budgetary allocation declining to as low as 2 percent or less of the national budget.

Figure 1.2 Trends in agricultural and economic growth (1960-2008)



The decline in growth started to reverse in the first half of 2000, when the average growth rate picked up to 2.4 percent. This was spurred by the concerted effort of the NARC Government, especially after 2003, to revive agricultural extension and other institutions and to increase investment in the agricultural sector. The Government, in the context of the Economic Recovery Strategy for Employment and Wealth Creation (ERS) and the Strategy for Revitalizing Agriculture, identified the agricultural sector as a priority and hence key to economic growth. The Government gradually started to put more investment in the sector and to increase its budgetary allocation to an average of 4.5 percent of the national budget.

However, these gains were affected by the violence following the 2007 general elections, crises caused by global food prices, escalating fuel prices of 2008, and the financial crises of 2008/2009 to the extent that the agricultural sector grew by a negative 2.5 percent in 2008. Therefore, it is imperative that this recent

downward trend is arrested quickly to put agriculture back on the trajectory of 2003-2007. This is possible because all plans and institutions that were spurring growth in 2007 are intact and can be made more efficient and effective.

1.2 Recent Strategies and Policies

1.2.1 The Economic Recovery Strategy (ERS)

Upon assumption of power in 2003, the NARC Government took the revival of the economy as its top priority. After 24 years in which the previous Government was in power, the new Government had overwhelming public and international support. It expeditiously developed a new strategy and policies, abandoning the policy on poverty reduction and adopting economic recovery. The Economic Recovery Strategy for Wealth and Employment Creation (ERS) was launched in 2003, as the blue print for setting the country back on the growth path.

The ERS laid emphasis on economic growth, creation of wealth and employment as a means of eradicating poverty and achieving food security. This was a major shift from the previous focus on poverty reduction and food security. The strategy identified agriculture as the leading productive sector for economic recovery. In addition, the strategy recognized that revival of agricultural institutions and investment in agricultural research and extension were critical and essential for sustainable economic growth. Therefore, ERS was the launching pad of the revitalization of the agricultural sector.

1.2.2 The Strategy for Revitalizing Agriculture

As a response to ERS, the Government developed and launched the Strategy for Revitalizing Agriculture (SRA) in March 2004. The strategy set out the Vision of the Government as "to transform Kenya's agriculture into a profitable, commercially-oriented and internationally and regionally competitive economic activity that provides high quality gainful employment to Kenyans". This was to be achieved within a framework of improved agricultural productivity and farm incomes, while conserving the land resource base and the environment. The Government's Vision pointed to a paradigm shift from subsistence agriculture to agriculture as a business that is profitable and commercially oriented. The SRA

also gave policy direction and actions that needed to be taken in each agricultural sub-sector to achieve the Vision.

The strategy also set out to have real output of the agricultural sector growth at an average of 3.1 percent during 2003-2007 and to reach around 5 percent by 2007. The development of the sector was considered to be top priority in poverty reduction because it is the most important economic activity on which the poor in the rural areas rely to maintain their livelihood. It was, therefore, required to contribute significantly to the following ERS targets:

(i) Reducing the proportion of the population below the basic poverty line from 56 percent in year 2000 to 26 percent by 2010; and,

(ii) Reducing the number of people who are food-cum-poverty stricken from 48.4 percent to 23.5 percent in 2008 and below 10 percent in 2015.

These targets are broad and require more than the agricultural sector to achieve them. Within the domains of the sector, the SRA identified the following six interventions to be in the fast track:

(i) Reviewing and harmonizing the legal, regulatory and institutional frameworks;

(ii) Restructuring and privatizing core functions of the parastatals and sector ministries;

(iii) Improving the delivery of research, extension and advisory services;

(iv) Improving access to quality inputs and financial services;

(v) Improving access to both domestic and external markets; and,

(vi) Formulating food security policies and programmes.

The following are some of the milestones achieved during the implementation of SRA:

(i) *Establishment of Agricultural Sector Coordination Unit (ASCU)*: Although the establishment of ASCU was well articulated in SRA, it took time to be implemented and accepted by the sector ministries. It was not until 2006 that the unit was fully established and staffed. Recruitment of key staff, which comprised seconded staff, went on until 2008. The unit is now well established and playing a key role in coordinating issues that cut across ministries. It also serves as a one-stop shop for the entire agricultural sector.

(ii) *Revival of agricultural institutions*: One of the pledges of the NARC Government was to revive all important public institutions that render services to citizens. Within the agricultural sector, this has been a success story. Examples of institutions that were on the verge of collapse and have since been revived are the Kenya Meat Commission (KMC), the Kenya Cooperative Creameries (KCC), the Kenya Seed Company (KSC), the Agricultural Finance Corporation (AFC), and the Agricultural Development Corporation (ADC). Institutions that were considered moribund and dysfunctional, such as research and extension services, with their sub-centres, training centres and tractor hire are now vibrant and providing services to farmers. Even institutions that were running into losses, such as the sugar factories, have revived and reporting profits.

(iii) *Increasing agricultural productivity*: Despite the vagaries of weather, the impact of climate change and external factors such as high cost of inputs, crop yields on smallholder farms have increased significantly over the last five years. For example, with respect to maize, the average yield has increased from 1.5 to 3 tons per hectare. This is attributed to better technology transfer and extension services. Furthermore, the yield of medium-scale and large-scale farmers has increased by a higher margin due to use of high yielding varieties and better agronomic practices.

(iv) *Development of policies and legislations*: Over the years, development of policies and legislations has been hampered by lack of capacity and a protracted process. In the last five years, over 15 policies and 6 legislations have been developed and are in the process of being implemented. Among these are: the Seed Policy; Food Security and Nutrition Policy; National Dairy Development Policy; National Agricultural Sector Extension Policy; Cotton Act 2006; and the Cooperatives Policy. This success is attributed to the restructuring of the ministries by creation of directorates and units that are coordinating policy development.

(v) *Increasing agricultural growth*: The SRA set the target for agricultural growth at an average of 3.1 percent by 2003 to reach 5 percent by 2007. This target was achieved reaching an average of 5.2 percent by 2007 with the highest being 6.2 percent in 2006. This growth path was intercepted in 2008 due to external factors. However, the sector has great potential to return to a growth path.

(vi) *Reduction of food insecurity and poverty*: The ERS had set a target of reducing food insecurity by 23.5 percent by 2008 and poverty by 26 percent by 2010. By the year 2007 food insecurity had been reduced by 12 percent from 48.5 to 36.5 percent while poverty had been reduced by 10 percent from 56 to 46 percent. This reduction was, however, intercepted by external factors in 2008. Nevertheless, indications are that the food insecurity and poverty reduction trends will be resumed.

Over the last five years, and in the course of implementation of SRA, several lessons were learnt that will be very useful in the implementation of ASDS. One of the key lessons learnt is the importance of sector coordination and sector-wide approach to planning and implementation. With the splitting of the agricultural sector into several ministries, it has become imperative that the only way to avoid duplication of efforts and create synergy among Government ministries is through better coordination. The establishment of Agricultural Sector Coordination Unit (ASCU) has, therefore, been instrumental in this endeavour.

Another important lesson learnt during this period is the role of the private sector in the agricultural sector. While more support and investment is required from the public sector for it to grow, much of the work, such as production, processing, marketing, value addition and financing, is done by the private sector. For example, sub-sectors where the Government has little involvement, such as horticulture, are resilient to external shocks and are growing rapidly. Likewise, sub-sectors that are liberalized perform better generally than those that are not. However, if liberalization is carried out where there is no critical mass and enough capacity for the private sector to grow, producers are exploited and these sub-sectors could collapse.

In promoting agriculture as a commercial business, it has emerged that marketing and associated infrastructure is critical. In this regard, the role of cooperative societies that deals with marketing of farmers' produce need to be revived and made efficient and effective. Furthermore, other marketing infrastructure such as wholesale and retail markets need to be established across the country.

1.2.3 The Vision 2030

The ERS was a 5-year plan that was to expire in the financial year 2007/2008. In early 2007 the Government started developing a new strategic plan to take over from the ERS. In June 2008, the Government launched the Kenya Vision 2030 as the new long-term development blueprint for the country.

The Vision of this strategy is "A globally competitive and prosperous country with a high quality of life by 2030". It aims at transforming Kenya into "a newly industrializing, middle income country providing a high quality of life to all its citizens in a clean and secure environment". The Vision is anchored on the following three pillars:

(i) The *economic pillar* that aims to achieve an economic growth rate of 10 percent per annum and sustain the same till 2030 in order to generate more resources to address the Millennium Development Goals (MDGs).

(ii) The *social pillar* that seeks to create just, cohesive and equitable social development in a clean and secure environment.

(iii) The *political pillar* that aims to realize an issue-based, people-centred, result-oriented and accountable democratic system.

The Vision 2030 has identified agriculture as one of the key sectors to deliver the 10 percent annual economic growth rate envisaged under the economic pillar. To achieve this, transformation of smallholder agriculture from subsistence to an innovative, commercially-oriented and modern agricultural sector is critical. This will be accomplished through:

(i) Transforming key institutions in agriculture, livestock, forestry and wildlife to promote agricultural growth;

(ii) Increasing productivity of crops, livestock and tree cover;

(iii) Introducing land use polices for better utilization of high and medium potential lands;

(iv) Developing more irrigable areas in arid and semi-arid lands for both crops and livestock;

(v) Improving market access for smallholders through better supply chain management; and,

(vi) Adding value to farm, livestock and forestry products before they reach local and international markets.

The Vision has identified the following four major challenges that continue to face the agricultural sector:

(i) *Productivity*: Productivity levels for many crops are below potential and for some agricultural produce yield and value over a five-year period have either remained constant or are on the decline. Similarly, the production level for most fish and livestock products is below potential. Forest cover and tree productivity have been on the decline while population growth has led to increased human wildlife conflict.

(ii) *Land use*: Land remains under-exploited for agricultural production both in the high and medium potential areas as well as in the Arid and Semi-Arid Lands (ASAL). Moreover, much of the available crop land remains under-utilized with smallholders utilizing only 60 percent of their land for agricultural production.

(iii) *Markets*: The productivity of the agricultural sector is constrained by inefficiencies in the supply chain resulting from limited storage capacity, lack of post-harvest services and poor access to input markets. As a result of this, the Vision calls for proactive efforts to maintain existing markets and create new ones to increase Kenya's bargaining power in global agricultural markets.

(iv) *Value addition*: In agriculture, value addition is important in determining the competitiveness of the country's produce in world markets. However, Kenyan farmers export semi-processed, low-value produce, which accounts for 91 percent of total agriculture-related exports. The limited ability to add value to agricultural produce, coupled with high production costs, make exports less competitive.

1.3 The Need for a New Agricultural Sector Strategy

Although much has been achieved in the last five years, food security, poverty reduction, transformation of agriculture from subsistence to commercial farming and agribusiness, markets, efficient use of inputs and agricultural credit still remain a challenge. With the expiring of ERS, the launching of Vision 2030, the achievement of most targets of SRA and the formation of a new Government in 2008, it became imperative to capture these new developments and revise the SRA.

A new strategy was, therefore, required to position the agricultural sector as a key driver for delivering the 10 percent annual economic growth rate envisaged under the economic pillar of the Vision 2030. The strategy would further be required to provide a guide for the public and private sector's effort in addressing major development challenges facing the agricultural sector. In addition, the new strategy has taken into account the ongoing institutional and policy reforms. It has also taken into consideration the country's new political system and structure of Government, the just completed ERS and the SRA, and incorporated agricultural policy proposals contained in the Vision 2030 medium-term plan. It has also taken into account other agricultural sector development initiatives such as the Comprehensive African Agricultural Development Programme (CAADP) that recognizes agriculture's contribution to accelerated economic growth in African countries and the Millennium Development Goals (MDGs) in which the United Nations member countries pledged to reduce extreme hunger and poverty by the year 2015.

In developing this strategy, the Government perceives that the agricultural sector has been revived and is now set on the path for further development, hence the Agricultural Sector Development Strategy (ASDS). The overriding goal of the ASDS is to achieve a progressive reduction in unemployment and poverty, the two major challenges of poverty and food security that Kenya continues to face. The strategy, therefore, outlines the agricultural policies, institutional reforms, and the programmes and projects that the Government will implement in both the short and long term in order to realize or achieve this goal.

2 CHARACTERISTICS OF THE AGRICULTURAL SECTOR

2.1 Land Resource Base

Land is the most important resource in agricultural production. Generally, limited availability of productive land is a major constraint to increased agricultural production. Kenya has an area of about 587,000 square kilometres, out of which 11,000 square kilometres is water. Of the remaining 576,000 square kilometres landmass, only about 16 percent is of high and medium agricultural potential with adequate and reliable rainfall. This potentially arable land is dominated by commercial agriculture with cropland occupying 31 percent, grazing land accounting for 30 percent, and forests occupying 22 percent. The rest of the land is used for game parks, urban centres, markets, homesteads and infrastructure.

About 84 percent of the country is Arid and Semi-arid Land (ASAL) and is not suitable for rain-fed farming due to low and erratic rainfall, even though there is limited cultivation of some crops. The ASALs are, however, used by ranchers, agro-pastoralists and pastoralists as rangelands. Therefore, agricultural growth must be led by intensification and substitution towards more high-value products and expansion of the cultivated area through irrigation.

2.1.1 Land tenure

In Kenya, land tenure can be classified into three broad categories, namely (1) communal land, (2) Government trust land, and (3) privately owned land. The communal land ownership system is based on traditional customary rights, and all individuals born in that community have a right to use, but not sell it. Government trust land is held by ministries or state corporations or other public institutions for public use such as buildings, forests, research and national parks. Privately owned lands are registered and the owner holds the

title under a freehold or leasehold system. The owner of such land can use it as collateral to access credit. Private ownership of land has encouraged investment in permanent and long-term improvements or development on farms to create a secure market for land.

2.1.2 Agro-ecological zones

Kenya can be divided into seven distinct ecological zones. These are: Tropical Alpine, Upper Highland, Lower Highland, Upper Midland, Lower Midland, Lowland and Coastal Lowlands. On the basis of rainfall, the country can be divided into three main production zones.

First is the high rainfall zone, which receives more than 1000 mm of rainfall annually, occupies less than 20 percent of the productive agricultural land and carries approximately 50 percent of the country's population. Most of the food and cash crops as well as livestock are produced in this zone under semi-intensive and intensive systems. The zone accounts for all the tea, pyrethrum, potato, coffee, vegetables and nearly 75 percent milk production.

The second production zone is the medium rainfall zone, which receives between 750 mm and 1000 mm of rainfall annually and occupies between 30 and 35 percent of the country's land area. It is home to about 30 percent of the population. There is significant migration of the population from the densely populated high rainfall zone to the medium rainfall zone. Farmers in this zone keep cattle, small stock and grow drought-tolerant crops.

The third production zone consists of the low rainfall areas, which receive 200-750 mm of rainfall annually. It is home to about 20 percent of the population, 80 percent of the country's livestock and 65 percent of the country's wildlife.

2.1.3 Natural resources

Despite recognizing that natural environment is the basis of all production, continued environmental and natural resource degradation constitutes a major challenge to economic development. Increasing population, changing patterns of human settlement, expansion of the urban environments, unsustainable land use systems and industrialization all pose a serious threat to environmental

degradation across the country. Until the 1990s, environmental management was largely viewed as unrelated to economic development. This contributed to unsustainable development patterns through accelerated land degradation including deforestation, desertification, degradation of soils, loss of biodiversity, climate change and industrial pollution. As a result this leads to poverty for a large section of the population that depends on the natural resource base.

2.2 Agricultural Systems

There are two agricultural production systems in Kenya, namely rain-fed and irrigated agriculture.

2.2.1 Rain-fed agriculture

Kenya's agriculture is mainly rain-fed. Therefore, it is entirely dependent on weather with bimodal rainfall in most of the country. Thus, with exception of very high altitude areas, there are two cropping seasons.

The performance of rain-fed agriculture is variable due to the diverse agro-climatic zones. In the humid, high altitude areas, productivity as well as predictability of good crop is high. Nevertheless, population density in these areas has increased to the extent that land has been subdivided into such small sizes that it is becoming uneconomic for farm enterprises. Restriction of land subdivision and intensification of farm enterprises is therefore required.

In the medium altitude and moderate rainfall areas, arable rain-fed farming is moderately suitable. However, there is relatively high risk of crop failure due to increased frequency of dry spells and an uneven rainfall distribution. Increasing productivity in these areas require better selection of crops, adoption of improved technologies, and better crop husbandry.

A large proportion of the country, accounting for more than 80 percent, is semi-arid and arid, with an annual rainfall average of 400 mm. In these areas, droughts are frequent and crop fails in one out of every three seasons. Most of the area is rangeland suitable for ranching and pastoralism. Farm enterprises comprise mixed crop and livestock. While there is ample land, farmers tend to grow crops that are not suitable for this rainfall regime as well as the soils. Therefore, these areas require

better planning, careful selection of farm enterprises and greater investment in infrastructure. The Government will put effort to harmonize and prioritize the development of arid and semi-arid lands.

2.2.2 Irrigated agriculture

Kenya is classified as one of the water deficient countries in the world. Water resources are unevenly distributed in space and time with about 56 percent of all the country's water resources found in the Lake Victoria Basin. Even in the basins, with the exception of the highlands, water resource availability is scarce. Consequently, the country's irrigation-based farming is still limited.

Irrigation agriculture in Kenya is mainly developed in form of irrigation schemes and large-scale irrigation of crops such as rice and coffee. Individual farmers have developed their own systems of irrigation especially for export crops such as coffee and horticultural produce. Large commercial farms account for 40 percent of irrigated land, while the smallholder farmers and government-managed schemes account for 42 percent and 18 percent of irrigated land, respectively.

With a national average rainfall of 400 mm, the country should be able to harvest and store adequate water for agriculture and other uses. Moreover, groundwater resources that can be exploited for agricultural purposes need to be assessed and quantified. More land can be reclaimed for crop use through development of irrigation infrastructure in the ASALs and reclaiming the waterlogged soils in the swampy areas. It is estimated that intensified irrigation can increase agricultural productivity four-fold and, depending on the crops, incomes can be multiplied ten-times.

2.3 Production Scale

2.3.1 Small-scale farming

Kenya's agriculture is predominantly small-scale farming, mainly in the high potential areas. Production is carried out on farms averaging 0.2 - 3 hectares mostly on commercial basis. This small-scale production accounts for 75 percent of the total agricultural output and 70 percent of marketed agricultural produce. Small-scale farmers produce over 70 percent of maize, 65 percent of coffee, 50 percent

of tea, 80 percent of milk, 85 percent of fish and 70 percent of beef and related products. However, adoption of improved inputs such as hybrid seed, concentrate feeds, fertilizers and pesticides or machinery by small-scale farmers is relatively low. Therefore, there is huge potential for increasing productivity for these farmers with adoption of modern farming practices.

In the rangelands, the small-scale livestock production system features mainly pastoralists. Livestock herd sizes are considerably large because of communal grazing with low use of purchased inputs like feed, drugs and artificial insemination. Production is mainly subsistence rather than market-oriented. Disease and nutrition are major constraints to increased livestock productivity in this system.

2.3.2 Medium-scale farming

Medium-scale farms range from 3 to 49 ha. Farmers in this category are receptive to technology, practise commercial agriculture by investment in inputs, marketing of produce and borrowing credit for farm development.

2.3.3 Large-scale farming

In Kenya, large-scale farming is practised on farms averaging about 50 hectares and 30,000 hectares for crops and livestock ranches respectively. The large-scale farming sub-sector accounts for 30 percent of marketed agricultural produce mainly involving the growing of crops such as tea, coffee, maize and wheat in addition to keeping livestock for commercial purposes. The use of improved technologies and better farm management has resulted in the increase of productivity per land unit in all categories of farming.

2.4 Agricultural Commodities and Enterprises

2.4.1 Crop production

Crop production is generally grouped into two categories based on the use of the harvested produce. The two categories are: food crops and cash/industrial crops.

Food crops: Food crops are classified into the following: cereals (maize, wheat, sorghum, rice, millet); pulses (beans, pigeon peas, cow peas, chick peas, green grams); and, roots and tubers (sweet potatoes, iris potatoes, cassava, arrow roots and yams). The main food crops out of this classification are maize, rice, wheat, sorghum, potatoes, cassava, vegetables and beans.

Most of the food crops have recorded increased production since 2002. Maize production increased from 2.4 million tons in 2002 to 3.2 million tons in 2006. However, this reduced to 2.9 million tonnes in 2007. Production of beans increased from 481,225 tons to 531,800 tons, while that of roots and tubers increased from 1.1 million tons to 1.8 million tons over the same period. However, the production of other food crops, including legumes and root crops, declined due to a combination of factors such as the effects of heavy rains, pests and diseases and lack of quality planting materials.

The above positive trends in the productivity of most agricultural crops was due to the measures adopted in the SRA implemented in the last five years up to 2008. Nevertheless, the production costs for most of these crops are high due to high input costs especially fertilizers, poor and long marketing chains, low level of mechanization and high transport costs. Increase in global fuel prices also contributes to this. Production of the main food crops – maize, wheat and rice – has generally been below the country's consumption requirements.

Industrial crops: The main industrial crops in Kenya are tea, coffee, sugar cane, cotton, sunflower, pyrethrum, barley, tobacco, sisal, coconuts and bixa, all of which contribute 55 percent of agricultural exports.

Tea is still one of the leading foreign exchange earners in the country. Tea production increased from 287,100 tons in 2002 to 370,200 tons in 2007, while the value of exports increased from Kshs 34.3 billion to Kshs 47.3 billion in 2006 decreasing slightly to Kshs 46.8 billion in 2007. The value of coffee exports increased from Kshs 6.5 billion to Kshs 8.7 billion over the same period, while pyrethrum recorded an average of 13 percent decline.

Another major cash crop, whose performance has declined, is sugar cane. Kenya produces about 400,000 tons of raw sugar annually, while consumption is 600,000 tons annually, which necessitates importation to meet the demand. Smallholder farmers in Nyanza, Western and Rift Valley Provinces are the main producers of

sugar cane. Due to the inability of local sugar to compete with imported sugar on the grounds of production costs, the latter poses a major threat to the local sugar industry and the five million people that it supports.

Other commercial crops whose production has remained low despite large unexploited potential are cotton, pyrethrum, oil crops, cashew nuts, bixa and sisal.

Horticulture: The horticultural industry plays an important role in the Kenyan national economy. The products in this industry include cut-flowers, vegetables, fruits, nuts, herbs and spices. The area under horticultural crops increased from just over 350,000 hectares in 2002 to over 380,500 hectares in 2006, while the value of total production increased from Kshs 32.0 billion to Kshs 54.4 billion over the same period. The value of horticultural exports grew by an average of 16 percent rising from Kshs 26.6 billion in 2002 to Kshs 43.3 billion in 2006 and rising to Kshs 65.2 billion in 2007.

2.4.2 Livestock production

Livestock plays an important economic and socio-cultural role among many Kenyan communities. Besides contributing to the food and cash needs of the operators and providing employment to about 10 million people, the livestock sub-sector contributes 7 percent to the GDP and 17 percent to the agricultural GDP. Further, it provides 50 percent of the agricultural labour. Both crop farmers and pastoralists keep livestock for food and income generation.

The livestock industry has a high degree of vertical linkages with upstream and downstream industries. It is a significant user of products from feed, drugs, vaccines and equipment manufacturing industries and is a major provider of raw materials for agro-processing industries. Therefore, any shock in the industry will affect the supply chain.

The key livestock sub-sectors are beef, dairy, sheep and goats, camel, poultry, piggery and emerging livestock.

Dairy industry: The country's dairy cattle are estimated at 3.5 million head. Dairy cattle are mainly kept in medium to high rainfall areas of the country. The key dairy breeds are Ayrshire, Friesians, Guernsey, Jersey and the cross breeds. In 2008, milk production was estimated at 5.1 billion litres valued at Kshs 100 billion. At current effective demand the country is self-sufficient in milk production.

Beef industry: The beef cattle population is estimated at 9 million. The main beef species are East African Zebu, Boran, Sahiwal and cross breeds. Although most beef is produced from rangelands, the dairy cattle culls contribute substantially to the national supply. On average, the country produces 320,000 MT of beef worth Kshs 62.1 billion. However, beef production is affected by climate variability and animal diseases.

Sheep and goats: Sheep and goats play a key role in pastoral households' food security and incomes owing to their short generation intervals, high adaptability and versatile feeding habits. The country has an estimated 13 million goats and 10 million sheep. Annual meat production is estimated at 84,000 MT of mutton and chevon worth Kshs 14 billion. However, the sub-sector has not received commensurate support both from the state and the development partners.

Poultry: Kenya has an estimated 28 million birds, out of which 76 percent consist of free-ranging indigenous chicken, while 22 percent consist of commercial layers and broilers. Other poultry species like ducks, turkeys, pigeons, ostriches, guinea fowls and quails make 2.2 percent and are becoming increasingly important. Annually, the country produces about 20 MT of poultry meat worth Kshs 3.5 billion and 1.3 billion eggs worth Kshs 9.7 billion.

Pigs: Pig rearing in the country has one of a relatively well-established pig industry in the African markets. It has withstood periodic fluctuations common in the pig industry moving from large-scale to small-holder farming. The country produces an estimated 12,000 MT of pig meat worth Kshs 1.2 billion.

Apiculture and emerging livestock: Beekeeping (apiculture) is practised in most parts of Kenya, particularly the ASALs. In addition to contributing directly to household food security and incomes, bees play an important role in plant pollination and thereby crop yields. The country produces an estimated 14,600 MT honey and 140 MT of bees wax annually all valued at Kshs 4.4 billion. Due to the low investment and variable costs involved, beekeeping is increasingly becoming popular in rural areas.

Camels: Camel keeping is mainly practised in the northern part of Kenya. In these areas the camel serves several roles, namely milk, meat, income and pack. Currently, there are 900,000 camels producing 7,000 MT of meats worth Kshs 1.0 billion and 200 million litres of camel milk worth Kshs 2 billion annually.

In response to the climate change, camel keeping is expected to extend to other regions in the coming decades. Already camel keeping has extended to the South Rift region and other parts of the country.

2.4.3 Aquaculture

The aquaculture sub-sector in Kenya has the potential of significantly contributing to the national economy through employment creation, foreign exchange earnings, poverty reduction and support to food security. The demand for fish is rising every day owing to the changing feeding habit among the Kenyan people as they move towards healthy living. Fish offers the best nutrition profile for humans with its cholesterol free white meat, which is increasingly demanded owing to increase in population..

Aquaculture is the only sustainable source of fish and has great potential for growth in Kenya. This is due to the fact that there are a wide variety of water sources such as rivers, springs, dams, lakes and ocean. In addition, most of the land that is suitable for other agricultural activities is also suitable for aquaculture. Moreover, swampy and marshy areas, which are unsuitable for crop production, are suitable for aquaculture. Aquaculture can also be integrated with other production activities such as rice farming, poultry and dairy production, which also increases production efficiency per unit area.

Aquaculture commercial enterprises are increasingly taking shape in the country. This is a paradigm shift from subsistence aquaculture, which has been practised in Kenya over the years. Due to aggressive extension, aquaculture has increased four-folds over a short time. In 2000 the production was about 1,000 metric tons and in 2006 the production had risen to 4,250 metric tons earning the country about Kshs 1.0 billion. This makes aquaculture the fastest growing production sub-sector in the country thus, one that should be given due attention and significant support.

The main constraints facing the development of aquaculture include the following: inadequate support to aquaculture infrastructure such as fish propagation hatcheries; poor quality fish seeds and feeds; inadequate budgetary provision; inadequate marketing information and uncertainties; limited aquaculture

research; lack of aquaculture policy; inadequate extension service provision; poor linkage between production and marketing; lack of National Aquaculture Extension Guidelines; and, lack of baseline data for aquaculture investment.

2.4.4 Forest and forest products

Forests are notably the origins of water streams for hydropower. Moreover, forests and related forestry activities contribute immensely to improvement of agricultural productivity through soil and water conservation and enhancing of soil fertility.

However, Kenya's national forest cover is at less than 3 percent compared to the internationally accepted level of 10 percent. This has been due to unplanned excision of land for settlements and excessive harvesting of trees without replanting of forests. The destruction of forestland has contributed to the increased rates of flooding as the concentration time is reduced on the bare ground leading to landslides and siltation of rivers. Currently, efforts in forestry development in the country focus on tree expansion in industrial plantations, on-farm, urban forestry and in local authority forests to achieve the desired 10 percent forest cover.

Adoption of agro-forestry has improved over the years. Degraded water catchments areas have not been fully rehabilitated while promoting on-farm forestry and conservation of natural environment is ongoing. Initiatives aimed at the introduction of commercial tree species in ASALs in order to control desertification and improve livelihoods have been undertaken. Integrated development that entails trees, wildlife agriculture and micro enterprises provide synergies that improve overall environmental and production needs.

2.4.5 Wildlife

The Government's fundamental goal for wildlife management is to maximize returns from wildlife. Wildlife-based tourism as a land use is competing favourably with other types. Returns from tourism can exceed returns from competing land use such as pastoralism and ranching, especially in the ASALs. Therefore, the challenge is to identify the best types of land use (or combination

of them) for specific areas of land in terms of their long and short-term benefits to the people.

The wildlife resources also represent huge potential in game farming. They meet local and international demands for certain game products from crocodiles, ostrich and guinea fowls among others. As a result there is need to review the wildlife policy and Act to provide the legal framework and incentives for wildlife related enterprises.

While most of the wildlife is concentrated in game parks and reserves, there is considerable population of wild animals in farmlands and ranches. The animals in the parks and reserves have been well managed and play a key role in the national economy mainly through tourism. However, the game in the farmland and ranches are seen as a menace, posing potential conflict between wildlife and the human population. Human wildlife conflict remains a serious threat to other forms of crop production including industrial forest establishment. Electric fencing has proved effective in reducing wildlife related damage and should be enhanced especially where the land use types are incompatible.

2.5 Cooperatives

The cooperative movement has played an important role in agricultural development and in the econom. Agricultural cooperatives have participated in procurement of inputs, production, value addition and marketing. In the financial sector the cooperative movement, through SACCOs, has mobilized savings and provided credit to producers.

Agricultural cooperatives form 46 percent of all cooperative societies in the country. They have 3 million members out of a total membership of 7 million for the entire cooperative movement. The cooperatives are member-owned and member-operated organizations with the Ministry of Cooperative Development and Marketing providing the necessary legal and regulatory environment.

The Government took cognizance of the role played by cooperatives in the development of the economy and has emphasized the need to revitalize the cooperative sector to play a significant role in the revival strategy of the economy through improved governance and management capacity. Consequently, the

Government has reviewed the Cooperative Societies Act and formulated a new Cooperative Development Policy in addition to Cooperative Investment Policy to guide the cooperative movement in the medium term.

Due to the enormous growth of the SACCOs in the last few years and to ensure that they continue to be relevant in the financial sector, the ministry has also proposed the development of new legal and regulatory regime to guide the development of SACCOs in the country. This would entail the establishment of a SACCO Regulatory Authority.

3 FEATURES OF AGRICULTURAL SERVICES

3.1 Agricultural Research

Currently, the agricultural research system comprises of public and private agricultural research institutions established under different legal and institutional frameworks. The Kenya Agricultural Research Institute (KARI), the Kenya Forestry Research Institute (KEFRI), the Kenya Marine and Fisheries Research Institute (KEMFRI) and the Kenya Industrial Research and Development Institute (KIRDI) are parastatal research institutions established under the Science and Technology (Amendment) Act of 1979 with specific mandates.

The Coffee Research Foundation (CRF), the Tea Research Foundation of Kenya (TRFK), the Kenya Sugar Research Foundation (KESREF), and the Kenya Seed Company (KSC) are state corporations that are registered under the Company's Act (Cap 486). These institutions are responsible for research on coffee, tea and sugar cane respectively, while KSC is involved in agricultural research relating to seed production. The National Irrigation Board (NIB), established under the State Corporations Act (Cap 446), has a research division that undertakes research on irrigation technologies and practices.

The universities are established under various Acts and charters and have faculties of agriculture and allied sciences that carry out agricultural research independently or in collaboration with other agricultural research institutions. However, these collaborative efforts are constrained. Despite the large number of skilled scientific staff engaged in agricultural research in both public and private universities, no mechanism exists to harness these strengths at the national level or even a designated process to link the universities with the large public or small private research initiatives and industry.

Some agricultural research is undertaken by private sector institutions. This research is geared at enhancing productivity, product quality and safety and competitiveness in domestic and global markets.

There are also regional and international research institutions undertaking agricultural research in the country. These institutions have regional and international mandates and offer opportunities for enhancing and complementing national agricultural research.

Overall, there is a sizeable pool of agricultural research institutions that are managed by independent management boards or councils, with each institution planning and executing research programmes independently. The challenge is how to establish an integrated agricultural research system that is well balanced and directed towards addressing the diversity of national development goals and objectives in light of limited resources.

3.2 Agricultural Extension, Training and Information Services

Agricultural sector extension service plays a vital role in the sharing of knowledge, technologies, agricultural information and linking the farmer to other actors in the economy. The extension service is, therefore, one of the critical change agents required in the transformation of subsistence farming to modern and commercial agriculture, which is critically important in promoting household food security, improving incomes and reducing poverty.

The extension system is a product of gradual evolution in extension management practices and the entry of the private sector, non-governmental organisations (NGOs) and civil society players over time in response to changes in economic policies. The changes have several implications on how extension is managed, application of approaches and methods, coordination and linkage of key stakeholders and the most optimal way of financing extension service in the country. Other Extension Service Providers (ESPs) include NGOs, community based organizations (CBOs) and faith based organizations (FBOs). The entry of these new players has helped to fill the gap created by the reduced presence of public sector extension service.

Several public training institutions in the country offer services to the agricultural sector. They include universities, middle-level colleges and institutes, and farmer and pastoral training centres. There are also private sector-run agricultural training institutions offering general and specialized courses. Other public support institutions also involved in human resource capacity building include a livestock

recording centre, national beekeeping station, fish breeding and demonstration farms, sheep and goat stations, livestock farms, agricultural mechanization stations and rural technology development stations. These institutions provide specialized training to clients (farmers and extension personnel) as well as acting as demonstration centres for improved technologies.

The institutional constraints in human resource development include inadequate level of funding of the public training institutions, which leads to deterioration of infrastructure and facilities for training and technology demonstration. There is also limited capacity to train on emerging areas such as husbandry of indigenous animals and plants, organic farming and advanced bio-technology. The slow pace of commercialization of services offered by training institutions and failure to respond to market demands for specialized courses is another stumbling block in capacity building. The Agricultural Information Centre, agricultural shows, field days, open forums and other resource centres have been important sources of agricultural knowledge, information and technology.

3.3 Marketing

Marketing of agricultural produce and products is critical to increasing agricultural productivity and commercialization of enterprises so that farming is perceived as a business. Generally, the marketing chains for the different commodities are long, intransparent and consist of many players, making them inefficient and unresponsive to the producers' needs.

Over the years, cooperatives have played a key role in the marketing of coffee, dairy products, pyrethrum, livestock, fish, handcrafts and honey. Out of 12,000 registered cooperatives, 49 percent are in agri-business, with a membership of over 7 million.

Marketing of agricultural produce and products within the country is conducted by the private sector either as formal marketing companies or as brokers. National and regional markets have great potential of expansion with better marketing infrastructure and quality assurance. The export markets mainly deal with raw commodities and have become stringent on issues of traceability, safety, sanitary and phytosanitary standards and maximum residue limits (MRLs).

3.4 Agricultural Credit and Inputs

3.4.1 Credit

Access to bank credit by farmers is still a major challenge despite the fact that Kenya has a relatively well developed banking system. Risks associated with farming business, coupled with complicated land laws and tenure systems that limit the use of land as collateral, makes the financing of agriculture by the formal banking industry unattractive. In addition, corruption, political interference in the operations, particularly of state-owned banks, and a dysfunctional court system in the past, gave rise to a culture of default, thereby leading to high levels of non-performing loan portfolio. This development forced many banks to charge prohibitively high interest rates to their customers, including farmers, in order to remain afloat.

On the whole, banks in Kenya charge abnormally high interest rates because of the limited effective competition in the banking industry, despite the large number of banks. The cost of bank credit and the limited number of banks in the rural areas are some of the factors that make it difficult for farmers to access bank credit.

During the first two decades of independence, the Agricultural Finance Corporation (AFC), set up by the Government at independence, provided long-term credit for the purchase of farms by individuals and groups, and for financing farm improvement and seasonal credit for production. Through provision of suppliers' credit, cooperative societies also supported farmers. These organizations are no longer important sources of finance for agriculture, as they have been mismanaged and run down; indeed, a large number of them almost collapsed. Today, farmers get the credit they require mainly from cooperatives, NGOs and community-based lending institutions.

3.4.2 Inputs

The other major inputs in agriculture are seeds, fertilizer, pesticides, feeds and farm machinery, breeding animals and building materials. The volume of various inputs has increased steadily over the last five years. Among these inputs, large increases were noted for fertilizers, purchased seeds and animal feeds. On a

positive note, this change indicates increased demand of inputs triggered by an increased crop farming and livestock keeping activities. The annual fertilizer demand increased from 329,449 tons in 2002/03 to 410,214 tons in 2006/07. Production of certified seeds for various crops increased from 12,998 tons in 2002 to 34,682 tons in 2006, while the volume of imported seeds increased from 1,217 tons to 4,773 tons over the same period respectively. The volume of pesticides imports reached 7,000 ton level in 2006/07. The inputs are distributed through a wide range of stockists and merchants all over the country. Also, some of the cooperative societies and commodity boards supply inputs to members.

However, the use of improved seeds has remained low due to poor distribution systems and the monopoly of the supply of seeds by the Kenya Seed Company (KSC), which concentrates its operations in high rainfall areas. The use of fertilizer is low due to its high price attributed to high cost of transportation and distribution systems. Fertilizer use in Kenya is about a third of the level used in India and a quarter of the level used in Indonesia. In addition to the high cost, adulteration by merchants, which affects the quality of fertilizers, seeds and pesticides, has limited the use of these inputs. The use of manure and compost has not been fully developed and only about 24.3 percent of the farmers use manure to improve soil fertility.

Animal feeds are manufactured locally by using crop by-products from the milling industry and imported micronutrients. The current installed capacity for concentrate feeds production is about 800,000 metric tons out of which only about 58 percent is utilized. There are about 100 feed manufacturers in Kenya with an annual turnover of about Kshs 7 billion. The smallest feed company produces about 1,000 tons per year, while the biggest feed company produces about 90,000 tons per year. In the fisheries sub-sector, only one company produces trout feeds and no company produces fish feeds for tilapia and catfish. Different fish species require different fish feed formulations due to variations in their nutritional requirements. Therefore, there is need for manufacture of quality commercial feeds.

Although there is over 60,000 metric tons of oilseed cake production capacity, the country is producing less than 30 percent with the balance (of the national requirements) coming in as imports mainly from other East African Community member states. Kenya imports feed additives such as vitamins, amino acids and minerals from Europe, China, Korea and India.

The use of feed additives, which are included in animal rations, is growing especially in intensive livestock production such as dairying, poultry and pig production. Feed additives are used to improve milk yield, growth rate and feed utilization efficiency. These include vitamins, amino acids, enzymes, growth promoters, antibiotics and pro-biotics. Feed additives are all imported. Poor quality of feeds due to inadequate regulation remains a major challenge.

Manufacture and distribution of fish farming inputs such as feeds, seeds, harvesting and marketing gears is still low and need to be developed further. Quality fish seeds are critical in the development of aquaculture. The aquaculture producer groups that are in their formative stages now will play a vital role in aquaculture inputs distribution. Sagana Aquaculture Centre is the main fish seed producer for tilapia and catfish seeds. However, the seed production capacity of the facility is inadequate to serve the national demand. Development of private fish seed producers is being encouraged.

The production of feeds is negatively affected by both good harvests and famine situations. During good harvests, excess maize is normally exported unprocessed, denying the industry the by-products which are used for producing animal feeds. When there is a shortage in the supply of maize, famine relief is distributed directly to consumers, denying the animal feeds industry the by-products that would have been supplied by millers. Like other inputs, availability of animal feeds is constrained by the cost and density of stockists.

The use of agricultural machinery has generally declined over the years, with the purchase of new machinery declining from an annual average of 1,500 pieces 20 years ago to about 300 per year in the last three years. This has been due to the high costs arising from taxation and maintenance costs. The use of animal-drawn equipment such as ox-ploughs has also remained low probably because of their technological inappropriateness. Most of the farm equipment, machinery and spare parts are imported, thus making them more expensive. Further, the increased reduction in farm size through subdivision makes the use of large machinery and mechanization of farming generally uneconomical.

3.5 Pests and Disease Control

Pests and diseases cause heavy losses through deaths, reduced productivity and loss of markets for products. Measures to prevent, control and eradicate diseases

and pests in livestock and crops play a major role in improving productivity. In the livestock sub-sector, notifiable, communicable, zoonotic, trans-boundary and trade-sensitive diseases are of major economic importance. Crop pests and diseases also reduce yields substantially, sometimes over 50 percent or total crop failure.

3.5.1 Livestock pests and diseases

Pest and disease control measures include surveillance, diagnosis, mass vaccination, quarantine restrictions, management of animal movement, test-and-slaughter, port sanitary controls and veterinary public health services. Decline in public sector funding over the years has impacted negatively the success in controlling pests and diseases. Previously controlled diseases have re-emerged including foot-and-mouth, anthrax, East Coast fever and rabies. Elsewhere in the world, new diseases have emerged including notifiable avian influenza and mad cow disease. Although these diseases are presently not reported in Kenya, they require heavy investment in preparedness, surveillance and controls at ports of entry.

3.5.2 Crop pests and diseases

A number of crop pests and diseases have continued to reduce the potential of farmer's crop yields both in pre and post-harvest. Up to 40 percent of post-harvest losses have been experienced due to lack of appropriate storage structure and poor handling. Some post-harvest disease pathogens like afflatoxins have been reported with catastrophic effects – in some cases deaths – among consumers in some parts of the country.

Invasive pests like locusts, army worms and Quelea birds are controlled by the Government. Other pests and diseases are controlled on-farm by farmers. However, pest and disease control still poses a major challenge to most farmers, especially small and medium-scale due to cost of pesticides and control equipment.

3.5.3 Fish pests and diseases

Diseases that threaten the health of fish include fungal and bacterial infections. Symptoms of fungal diseases include cotton-like growths on skin, mouth, eggs

and barbells, which result in heavy losses of eggs and fry caused by poor handling. Control is by use of a few milligrams of malachite green added to the pond/ enclosed water.

Bacterial diseases are as a result of parasitism, poor water quality and poor nutrition. They lead to loss of appetite, white spots around the mouth and fin, and the fish exhibits 'waddled' or nervous swim pattern at or near the surface.

Other health threats to fish are the parasites – ectoparasites and endoparasites – such as leeches. While small numbers of parasites do little harm in most cases, in large numbers they can seriously compromise the health of the fish. Control and prevention of these pests and diseases is also the concern of the Government.

3.6 Statutory Boards and Development Authorities

Statutory boards provide regulatory and specialized services on behalf of the Government. There are many commodity and non-commodity regulatory boards and companies performing these functions. Although there has been some improvement in the functioning of some boards, most of them still require intervention to improve their performance.

Regional Development Authorities (RDAs) were formed with the overall objective of ensuring optimal exploitation of river basin resources for equitable, balanced and sustainable development within their respective areas of jurisdiction. There are six Authorities, namely (1) Tana and Athi River Development Authority (TARDA); (2) Kerio Valley Development Authority (KVDA); (3) Lake Basin Development Authority (LBDA); (4) Ewaso Ng'iro North Development Authority (ENNDA); (5) Ewaso Ng'iro South Development Authority (ENSDA); and, (6) Coast Development Authority (CDA).

RDAs serve a useful link in development. They are mandated to reverse the development disparities in the regions by acting as drivers of integrated regional socio-economic development through planning, developing and implementing as well as coordinating basin-based programmes and projects such as provision of hydropower, water supply for irrigation, domestic and industrial use as well as environmental conservation. They also promote resource mobilisation and investments in their respective regions.

4 CHALLENGES, OPPORTUNITIES, VISION AND MISSION

4.1 Challenges and Constraints

The recent performance of the agricultural sector has been encouraging in a number of important commodities/enterprises notably horticulture, dairy and maize. It is arguable that over the last 5 years, the agricultural sector has been revived and is on a trajectory of further development. However, challenges remain in some commodities such as coffee, tea, sugar and pyrethrum and in exploiting the potential in livestock and fisheries. A range of emerging constraints to agricultural growth also remain to be addressed.

Challenges and constraints facing the sector vary with respect to commodities and regions. The effects of some of the challenges and constraints have been accelerated by the worldwide food price crisis and its underlying drivers in 2008. The following are the key constraints and challenges that this strategy will need to address:

(i) *Inadequate budgetary allocation:* Insufficient budgetary allocation to the agricultural sector is a key constraint. In 2003 under the Maputo Declaration, African heads of state committed themselves to allocate 10 percent of their annual budget to the agricultural sector, which Kenya has not yet achieved. By 2008, the sector received 4.5 percent of the budget. This insufficient allocation has reduced human resources and service delivery by Government institutions.

(ii) *Reduced effectiveness of extension services*: The effectiveness of extension services declined over the last two decades due to inappropriate methods and sharp reduction in the operational budgets and human resources of the sector ministries. In particular, livestock extension in ASALs has been underfinanced. While much has been achieved in the last 5 years, inadequate financial and human resources continue to constrain the sector.

(iii) *Low absorption of modern technology*: Use of modern science and technology in agricultural production is still limited, although Kenya has a well-developed agricultural research system. Inadequate research-extension-farmer linkages to facilitate demand-driven research and increased application of improved technologies continue to constrain efforts for increasing agricultural productivity.

(iv) *High cost and increased adulteration of key inputs*: The cost of key inputs such as seeds, pesticides, fertilizers, drugs and vaccines has been too high for resource poor farmers. Such high cost lead to low application and adulteration of the inputs.

(v) *Limited capital and access to affordable credit*: Farming is deemed highly risky by the formal banking sector; thus receiving little attention. Without credit, farmers are hard pressed to finance inputs and capital investment. A number of micro-finance institutions are operating, but they tend to increase the cost of money, reach only a small proportion of smallholder farmers, and provide short-term credit. The formal banking system is just beginning to develop credit facilities particularly suited to small-scale farming.

(vi) *Pre and post-harvesting crop losses*: There have been high levels of waste due to pre-harvest and post-harvest losses occasioned by pests and diseases and lack of proper handling and storage facilities. Smallholder farmers are unable to cope with pests and diseases mainly due to lack of information.

(vii) *Heavy livestock losses due to diseases and pests:* Livestock diseases and pests have a negative impact on animal production and marketing and pose a threat to human health. Specifically, they cause heavy losses through deaths, reduced productivity and loss of markets for products. The prevalence of trans-boundary diseases such as foot-and-mouth, chronic bovine pleuro-pneumonia, lumpy skin disease, trypanosomiasis, ECF, brucellosis, PPR, CCPP, rabies, Newcastle disease, and Gumburo disease among others continue to be a challenge. Emerging and re-emerging diseases like Rift Valley fever, avian flu and bovine TB which are also zoonotic, need sustained surveillance.

(viii) *Low and declining soil fertility*: The rising population density has contributed to the subdivision of land to uneconomically small units. In addition,

the reduction of the fallow periods and continuous cultivation has lead to rapid depletion of soil nutrients, declining yields and environmental degradation.

(ix) *Inappropriate legal and regulatory framework:* While much has been achieved in the last five years, an outdated and fragmented legal and regulatory framework still remains a challenge to development in the agricultural sector.

(x) *Lack of coherent land policy*: There is no comprehensive land policy covering use and administration, tenure and security, and delivery systems of land. This has resulted in low investment in the development of land, underutilization of productive land and lack of access to land.

(xi) *Inadequate disaster preparedness and response:* There is low preparedness, response capacity and coping mechanisms with respect to disasters caused by drought, floods, fires, diseases and pests. Early warning and response systems need to be strengthened and widened.

(xii) *Multiple taxes*: As they transport or market their farm produce, farmers have been subjected to multiple taxes from local authorities and Government departments. This has contributed to the reduction of net farm incomes and created distortions in marketing structures without necessarily improving the services that these authorities are supposed to deliver.

(xiii) *Weak surveillance on offshore fishing*: The weak capacity to effectively monitor and enforce compliance and regulations governing the exploitation of offshore territorial waters has limited Kenya's ability to fully exploit the offshore fishing potential.

(xiv) *Inadequate infrastructure*: Poor rural roads and other key physical infrastructure have led to high transport costs for agricultural inputs and products. This has reduced farmers' ability to compete. In addition, electricity in rural areas is often not available or is expensive leading to reduced investment especially in cold storage facilities, irrigation and processing of farm produce.

(xv) *Insufficient water storage infrastructure*: The high variability of weather events in forms of floods and droughts is likely to remain high or even

increase in light of global climate change. Water harvesting and storage infrastructure needs to be expanded to store the water run-off for livestock watering points and irrigated agriculture and fish farming.

(xvi) *Inadequate storage and processing facilities*: Inadequate storage facilities constrain marketability of perishable goods such as fish, dairy products, beef and vegetables. Lack of fish processing facilities close to the Lake Victoria region and the coastal area (Mombasa) has limited the extent of exploiting fish resources.

(xvii) *Inadequate markets and marketing infrastructure*: While Kenya's agriculture is deemed to be better developed than most countries in sub-Saharan Africa, the domestic market is so poorly organized as to take advantage of the regional market. The local marketing information system has recently been established but not well utilized. External markets have no adequate diversification due to non-trade barriers by foreign markets.

(xviii) *Increasing incidence of HIV/AIDS, malaria, waterborne and zoonotic diseases*: The rapid spread of these diseases and the corresponding deaths have resulted in the loss of productive agricultural personnel and manual labour force for sustained farming knowledge, and diversion of resources to the treatment of these diseases.

4.2 Opportunities

In spite of the many challenges and constraints limiting agricultural growth in Kenya, there exist many opportunities and advantages, which can be exploited to build a robust and dynamic agricultural sector. These include the following:

(i) *Abundant human resources:* Kenya is endowed with massive but underutilized human resource capacity. Primary, secondary and post-secondary education has expanded and produces thousands of graduates each year. This resource can be applied to change the face of agriculture if young people, from primary to university level, are to be attracted to agriculture as a career. The resource can be used in training and research to develop new and relevant technologies and in the creation and expansion of agribusinesses.

(ii) *New and expanding markets:* Kenya is uniquely placed to take advantage of expanding domestic, regional and international markets. Due to the

diverse agro-ecology, the country can produce a wide range of temperate, tropical and sub-tropical products. Large and expanding markets for traditional products like maize and other cereals, beef and dairy products, tea, coffee and pyrethrum exist. Global demand for horticultural products and emerging crops and livestock such as ostrich, guinea fowl, crocodiles, frogs and butterflies, gum arabic, assorted resins and essential oils, and aloe, among others remain underexploited. Vast opportunities are opening up in production of bio fuels from sugar cane, maize, millet and sorghum, Jatropha and other oil bearing seeds.

(iii) *Potential for increasing production:* It is estimated that potential from increased production of traditional commodities in Kenya has not been adequately exploited. Agricultural productivity can be increased in multiples through better usage of unutilized land in traditional farming areas and irrigated agriculture. The vast livestock potential of the 80 percent of the country that is arid and semi arid remains untapped as does the fisheries potential of the Exclusive Economic Zone in the Indian Ocean and of fish farming in the highlands and ASALs.

(iv) *Vast irrigation potential:* Kenya's irrigation potential is estimated at 540,000 ha of which only about 105,000 ha is exploited. The potential for exploitable irrigation can be expanded by 1,000,000 ha through development of the Tana and Athi basins. Lake Victoria has a 253 km shoreline that is basically unused despite the huge irrigation potential.

(v) *Potential for increasing yields:* Yields of crops and livestock are far below their potential. Yields of maize, sugar and dairy are one-tenth of global potential. Tripling national average yields of major crop and livestock production systems in the country is easily achievable.

(vi) *Value addition:* Value addition includes processing, branding, quality certification and accreditation, as well as farm level quality improvements that the market can value. It is estimated that in Kenya, 91 percent of total agricultural exports are in raw or semi-processed form. Thus, the country loses billions in earnings through lack of value addition. Potential for value addition of products such as tea, coffee, pyrethrum, hides and skins, milk and beef, fruits and vegetables remain largely untapped.

Given the challenges and constraints facing agriculture, the country's agricultural potential and the available and emerging opportunities, the main critical strategic issues that need to be addressed in order to ensure accelerated growth of the agricultural sector as envisaged in Vision 2030 include the following:

(i) Empowerment of farmers by strengthening producer organisations

(ii) Improvement of regulatory framework

(iii) Review of taxation on agriculture

(iv) Improvement of the agricultural extension system

(v) Establishment of an efficient agricultural research system

(vi) Increasing competition in the supply of agricultural inputs

(vii) Improvement of access to financial services and credit

(viii) Market orientation

(ix) Encouragement of growth of agribusiness

(x) Development and implementation of land reform and agricultural land use master plan

(xi) Improvement of environmental management

(xii) Strengthening of institutional framework for coordinating development in northern Kenya and other arid lands

(xiii) Improvement on food security and nutrition.

4.3 Vision and Mission

Given that the agricultural sector is still the backbone of Kenya's economy, and the means of livelihood for most of the rural population, it is inevitably the key to food security and reduction of poverty. The Vision of the sector is, therefore, "**A Food Secure and Prosperous Nation**."

The overall agricultural sector goal is to achieve an average growth rate of 7 percent per year over the next 5 years. Given the critical strategic issues that need to be addressed, the strategic Mission for the sector is "**An Innovative, Commercially-oriented and Modern Agriculture".**

The overall development and growth of the sector is anchored in the following two strategic thrusts:

(i) Increasing productivity, commercialization and competitiveness of the agricultural commodities and enterprises; and,

(ii) Developing and managing the key factors of production.

These thrusts will require critical inputs and support from enabling sectors and factors such as macro-economic environment, security, infrastructure, education and social development. Furthermore, institutional reforms and better coordination will be critical for the delivery of the Vision of the agricultural sector.

Assuming conducive external environment and support from enabling sectors, the agricultural sector has set the following key targets by 2020:

(i) Reduction of people living below absolute poverty line to less than 25 percent to contribute to achieving the MDGs set by the United Nations

(ii) Reduction of food insecurity by 30 percent to surpass the MDGs set by United Nations

(iii) Increase in the contribution of agriculture to the GDP by more than Kshs 80 billion per year as set out in the Vision 2030

(iv) Divestiture in all state corporations dealing with production, processing and marketing that can be better done by the private sector; and,

(v) Reform and streamlining of agricultural service institutions such as research, extension and regulatory to be most effective and efficient.

5 SUB-SECTOR STRATEGIC FOCUS

The strategic thrust on **increased productivity, commercialization and competitiveness of the agricultural commodities** will enable the agricultural sector to export more of its output and thereby earn the country foreign exchange and create employment. Experience has shown that where agriculture is technology-led, poverty alleviation and food security can be achieved. The promotion of agricultural growth and development, however, must be done in a manner that does not cause severe environmental damage.

5.1 Crops and Land Development Sub-sector

The crops and land sub-sector is predominantly characterised by small-scale farming, mainly in the high potential areas. Small-scale farming accounts for 75 percent of the total agricultural output and 70 percent of marketed agricultural produce. Small-scale farmers produce over 70 percent of maize, 65 percent of coffee, 50 percent of tea, 65 percent of sugar, and almost 100 percent of the other crops. Production is carried out on farms ranging from 0.2 to 3 ha for subsistence and commercial purposes. Currently, smallholder farmers' use of improved inputs such as hybrid seed, fertilizers and pesticides or machinery is very low. Therefore, increase in productivity will need to take place in smallholder farming and involve concerted efforts to encourage farmers to adopt modern farming practices.

In Kenya, large-scale farming is practised on farms averaging about 50 ha and it accounts for 30 percent of marketed agricultural produce. Large-scale farmers are mainly involved in the growing of crops such as tea, coffee, horticulture, maize and wheat. As a result of sustained use of higher inputs and better management, the farmers tend to have higher yields than their small-scale counterparts.

Great potential exists in the crops and land sub-sector which can be utilized to realize high quality crop production. The sub-sector will, therefore, strive to

improve and sustain agricultural resource base – increase capacity for production, improve delivery of extension services, support technology development and transfer with a view to achieving the full potential in agricultural production.

There has been a general increase in both production and productivity for most food crops except Irish potatoes. This is attributed to both the expansion of the area under production and the introduction of higher yielding varieties. While most industrial crops recorded a gradual increase in total production, their overall mean yield productivity has declined drastically over the years due to various factors ranging from inadequate utilization of inputs, inappropriate agricultural practices and natural calamities. In order to raise production and productivity there is need to address the prevailing constraints. Although the total production and productivity for horticultural crops have been rising since independence, there is still a considerable gap between the current levels and the mean potential.

The productivity and competitiveness of the crops and land development sub-sector has been challenged and constrained by:

(i) Inappropriate policy and legal framework that is not fully supportive of private sector-led agricultural development in a liberalized economic environment

(ii) Insufficient and poorly maintained transport and market infrastructure for handling food products in urban and rural areas resulting in high levels of waste and spoilage

(iii) Low agricultural output and productivity caused by low adoption of appropriate technologies such as high yielding crop varieties, inadequate application of fertilizers and manure, inefficient tillage and cultivation methods, high cost of inputs and productive resources such as credit and irrigation infrastructure

(iii) Poor performance of research and extension systems due to low Government investment, restrictions on staff recruitment and weak research-extension linkage

(iv) Inappropriate land use practices and environmental policies that have

been instrumental in encouraging land fragmentation, extension of urban development into agricultural land, retention of idle land, cultivation of river banks, deforestation and encroachment into catchments areas and wetlands

(v) Weak institutional framework, which lead to poor coordination of the various actors following liberalization of service delivery

(vi) Poor access to agricultural information and technologies leading to low output, limited access to markets and narrow market destinations for various commodities the country is capable of producing

(vii) Poor access to credit by producers in spite of a well developed financial sector

(viii) Weak institutional capacity attributed to deficiencies in the determination of training needs and monitoring and evaluating of training undertaken as well as high turnover of the senior personnel, which lead to loss of institutional memory and change of priorities.

To address these challenges, the following strategic interventions aimed at increasing the productivity and competitiveness of the crops and land development sub-sector will be implemented:

(i) Formulation and implementation of appropriate policy and legal framework

(ii) Improvement of agribusiness and market access

(iii) Strengthening of research, extension and training

(iv) Improvement of land use and crop development

(v) Enhancing accessibility of affordable inputs and credit to farmers

(vi) Enhancing institutional efficiency and effectiveness in implementation and service delivery.

5.1.1 Formulation and implementation of policy and legal framework

The current policy environment is not fully supportive of private sector-led

agricultural development. Over time, multiple and complex laws and regulations have evolved in the agricultural sector. These laws and regulations are not properly aligned for investment in a liberalized economic environment. Appropriate policies should provide for the changed role of Government as a facilitator and regulator of agricultural activities.

In addition, the current tax structure is a disincentive to agricultural development. Agriculture faces many taxes and levies at farm gate and within the marketing-distribution channels. Therefore, there is need to work towards rationalized taxation system in agriculture to create a favourable climate for production and marketing of produce.

Policy priorities will seek to promote a competitive agricultural sector and the development of diversified market outlets and products. The sector will review and harmonize the existing policies and create a new policy framework for transforming the sector. The ongoing review of all laws and regulations governing its operations will be completed to create a favourable environment for development.

It is Government policy to divest from commercial operations. The approach to the reform of regulatory institutions with a dual mandate will be addressed. The developmental mandate of these institutions will be "shed" to the private sector, including farmer apex organizations. Other commercial public institutions will be assessed on the basis of the core functions of the sub-sector. The research institutions fall under this category. Other institutions especially those with a commercial mandate will be commercialized or privatized, depending on the degree to which they contribute to the service delivery in the sub-sector.

Plant protection and quality assurance services are crucial in increasing productivity and reducing losses along the production. trade chains, and in the promotion of exports. The prevalence of disease outbreaks and incidence of major pests have limited the utilization of large portions of fertile land for agriculture, increased costs and losses and prevented trade in plant products. Further, the pollution of the environment, the misuse and adulteration of agro-chemicals as well as seed, are becoming a serious Government and public concern.

The bodies that address these concerns are the Plant Protection Services, Kenya Plant Health Inspectorate Service (KEPHIS), the Pesticides Control Products

Board, the National Environment Management Authority (NEMA) and the Kenya Bureau of Standards (KBS). These bodies are expected to control plant pest and diseases, regulate and monitor aspects of plant health services, license the use of agro-chemicals and undertake other quality assurance measures. With so many bodies, there is the risk of inefficiency, duplication of efforts and over-regulation of the agricultural sector. This is counterproductive.

In order to strengthen these services, the sub-sector, in collaboration with the other agricultural sector ministries and stakeholders, will rationalize the regulatory bodies to achieve economies of scale, improve efficiency, quality and synergies while minimizing on overlaps and duplication. To achieve this, the laws that relate to the delivery of plant protection services will be reviewed and their enforcement enhanced.

5.1.2 Improvement of agribusiness and market access

Market access is critical to agricultural development. Related to this is the need to address issues along the entire value chain in order to enhance agricultural productivity. The major agricultural exports include industrial crops such as tea, coffee and pyrethrum plus horticultural produce, which are dominated by fruits, vegetables and flowers. These products have been exported in their raw form with little or no value addition resulting in reduction of their competitiveness in the global market.

The sub-sector will lay emphasis on collection, collation and dissemination of information on the domestic and international markets. The information will be disseminated to producers, exporters and service providers. Global information networks will be developed through subscriptions to trade information systems and close collaboration with Kenya's Diplomatic Service. In support of an effective marketing strategy, the agriculture sub-sector will collaborate with other stakeholders in the public sector to facilitate the private sector in the development of marketing infrastructure, especially rural market facilities. Farmer organizations will be supported and empowered to play their role in providing market support services.

An effective market infrastructure should address the quality and safety standards compliance process. The sub-sector will work closely with relevant stakeholders to ensure that agricultural products meet international quality and safety standards.

Kenya is a member of World Trade Organization (WTO). The Multilateral Trade System (MTS) aims at expanding markets through global trade liberalization. The agriculture sub-sector will be a key player in the multilateral and bilateral trade negotiations with the objective of expanding and diversifying agricultural products and markets. Regional markets, especially the COMESA block, are now the major destination of Kenya's exports. Therefore, the sub-sector will collaborate with other relevant sectors and sub-sectors in promoting economic co-operation and regional integration as a strategy for expanding local markets.

In view of the paradigm shift undertaken by the entire agricultural sector, appropriate credit packages for small-scale producers will be developed to facilitate access of key inputs. Further, the sub-sector will enhance value addition technologies through capacity building among stakeholders, material and financial support. These strategies are aimed at shifting the sub-sector from subsistence agriculture to farming as a business.

In order to broaden the lending base, the sub-sector will advocate appropriate legislation to encourage commercial and micro-finance institutions to facilitate small-scale agricultural producers. In collaboration with other stakeholders, the sub-sector will also support mobilization of financial resources through SACCOs and other community-based lending organizations to accelerate agricultural development.

The sub-sector will address the high cost of agricultural inputs through formulation and implementation of farmer-friendly policies, promotion of rationalized inputs distribution system, competition within the supply chain and provision of information on the availability and cost of inputs.

5.1.3 Strengthening research, extension and training

Kenya has relied on a narrow range of marketed agricultural products. Primarily, these are commodities such as tea, coffee, sisal and horticulture. Expanded and diversified regional and global market access for the country's agricultural products will largely depend on the competitiveness of the agricultural sector. This calls for improved productivity and increased agricultural production base.

The country's agricultural resource base will be increased and improved through development of diversified demand-driven crop varieties, intensive

application of appropriate technologies and expanded use of irrigation systems in agricultural production. To achieve this, the research-extension linkages will be strengthened to ensure demand-driven research and effective application of research technologies at the farm level. In addition to this, the private sector will be encouraged and supported to invest in agricultural production at all levels of the supply chain. This will include farming, research and extension, to processing and marketing.

The need to strengthen extension services and create strong linkages between research and extension services is one of the sub-sector's overriding objectives. It is clear that effective adoption of technology packages will require a participatory approach to extension services. The sub-sector will strengthen its extension service delivery system and also encourage private sector participation in the delivery of extension services and will in particular, empower farmer organizations and communities to provide these services at the grassroots level.

The sub-sector will also improve and strengthen support services in the sector, to include access to appropriate and affordable credit, access to production and market related information, access to appropriate technologies and improvement of its institutions such as the agricultural training colleges, rural training development centres and agricultural training centres. The sub-sector will work with the private sector and agricultural sector ministries and agencies to make these support services available to farmers and service providers.

Information generation and dissemination in all aspects of agriculture is very important for the development of the industry. Essential aspects of information for agriculture should embrace the totality of the value chain from the farm to the market. Data and information on production systems and production resource base, the distribution systems and marketing channels and the regional and global market access opportunities and constraints, is essential to the sustained development of a competitive agricultural industry. Development and operationalization of internal data management within the sub-sector and between the agricultural sector ministries and agencies will enhance efficiency in service delivery.

5.1.4 Improving land use and crop development

The sub-sector will ensure dynamic equilibrium of agricultural land through sustainable land use practices and environmental conservation. In terms of land

development, the sub-sector will conceptualize and develop irrigation schemes, soil and water conservation programmes, reclaim dry land and mash land, and protect forests and river banks. Through this intervention strategy, the sub-sector will enhance sustainable land management through promotion of the development and adoption of soil and water conservation measures, agro forestry, river bank protection, water harvesting technologies, and equip and improve agriculture mechanization stations.

In order to enhance sustainable and competitive crop productivity the sub-sector will adopt the agricultural product value chain approach to address the identified challenges. Emphasis will be placed on the access to productive resources, implementation of relevant policies and promotion of flagship projects. This will include promotion of appropriate technology, participatory extension and research, strengthening of stakeholder partnerships, commercialization of crop enterprises and compliance with food safety and quality regulations.

Food security is a critical tenet of any nation. To achieve this, food security initiatives will be up-scaled. This will involve development of appropriate technologies for the various agro-ecological zones and, in particular, the ASALs where drought resistant and new and emerging crops will be promoted alongside irrigation, water harvesting and farm forestry.

5.1.5 Enhancing access to inputs and credit to farmers

Access to inputs and credit are very critical to increasing agricultural productivity and farming as a business. Therefore, it is imperative that there are appropriate credit packages that are suitable for small-scale producers to enable them access key inputs such as fertilizer, agrochemicals and seed, capital investment such as irrigation infrastructure, value addition technologies, compliance with food safety regulations and general farm development. The ministry will, therefore, employ the following strategy: develop appropriate credit packages that are suitable for small-scale producers; improve access to key inputs; and implement fertilizer cost reduction investment flagship project

As outlined in the Vision 2030 and in the Medium Term Plan (MTP), the flagship fertilizer cost reduction investment project will be implemented in collaboration

with private partners and will review institutional ability to import and distribute fertilizer in bulk to reduce cost of the input, promote local fertilizer blending and initiate the establishment of national/regional manufacturing plant. In order to ensure the successful implementation of the bulk fertilizer purchase programme, the Government will facilitate farmers' capacity building and enhance farmers' institutions capacity for efficient fertilizer ordering and distribution.

5.1.6 Enhancing institutional efficiency and effectiveness

As the main economic sector of the country, there are many stakeholders and institutions involved in agriculture. Similarly the sub-sector deals with many stakeholders and has several institutions that assist in delivering the many services required by the farming community. It is imperative that these stakeholders are well coordinated to avoid duplication of efforts and wastage of resources. Furthermore, the many institutions within the sub-sector need to be efficient and effective in service delivery.

The sub-sector will employ the following strategies to address this objective of coordination: restructuring of the sub-sector and its institutions for improved coordination, strengthening of Public Private Partnerships, training and fostering positive organizational and service integrity through a well trained human resource. In addition, the sub-sector will mainstream gender, HIV/AIDS and other cross cutting issues in development programmes. Further, the development and management of an integrated information system that informs programme planning and management will be installed.

5.2 Livestock Sub-sector

The livestock sub-sector is vital to the country's economy as it contributes 7 percent of the GDP. Animals are a source of food, more specifically protein for human diets, income, employment and foreign exchange. Livestock also provide draught power, organic fertilizers for crops production and a means of transport. Increasing population, income growth and urbanization are boosting the demand for food of animal origin at an unprecedented level. According to statistics, the world aggregate meat consumption will increase from 209 million tons in 1997 to 327 million tons by 2020 and milk consumption from 422 to 648 million tons.

Poverty-reducing opportunities for livestock development have not been tapped into. In the high rainfall areas, immense potential for development of dairy, poultry and pig industries exists. In the ASALs lies an immense base of natural resources endowment for the development of meat, honey, gums and resins, and emerging livestock industries.

Many challenges and constraints have faced the livestock sub-sector which have impacted negatively on the rate of livestock development. These include weak policy and legal frameworks, low livestock productivity and erratic and unpredictable weather conditions, which affect the quality and quantity of livestock feed and water supply. Other constraining factors include the prevalence of trans-boundary animal and zoonotic diseases and pests coupled with inadequate technical capacity for disease control, weak delivery of extension services, poor access to local and international market and unreliable data and information management in the livestock industry.

To address these challenges, the livestock sub-sector will implement the following strategic interventions aimed at driving the transformation of the livestock development:

(i) Reviewing of policy, legal and institutional frameworks

(ii) Improvement of livestock productivity

(iii) Integration of development and management of rangeland

(iv) Improvement of animal health and quality assurance services

(v) Improvement of access to market

(vi) Establishment of a centrally coordinated livestock database

(vii) Implementation of disease free zones flagship project.

5.2.1 Reviewing of policy, legal and institutional frameworks

The policy and legal environment in the livestock sub-sector requires updating to realign it with current goals and challenges both in the local, regional and international spheres. Many of the legislations have not been updated for a long time rendering them ineffective and difficult to implement. In addition, institutions in the sub-sector are either weak, absent or are underperforming. They also face challenges of low capacity with respect to human, physical and financial resources.

All relevant laws and policies will need to be reviewed in an effort to reflect the current practices. Where none exist, they will be formulated and this will be done in collaboration with stakeholders. Policy and legal reform areas of intervention include National Livestock Policy, Poultry Policy, Livestock Breeding Policy, Animal Disease Control Policy, Animal Welfare Policy, Apiculture Policy, Dairy Development Policy, Animal Feedstuff Policy and National Veterinary Pharmaceuticals Policy. With regard to institutions, developing, reforming and strengthening them will facilitate efficient service delivery and the attainment of sub-sector objectives.

5.2.2 Improving livestock productivity

Livestock productivity is constrained by a number of factors key among them breeding, feeding and nutrition, and inadequate extension services. In order to improve livestock productivity, strategies will be developed and implemented to improve livestock breeds, improve regulation of feeds, develop pastures and forage, and enhance research and extension services.

(i) Animal breeding

Animal breeding is one of the key intervention areas for increased livestock productivity. Currently, livestock productivity is negatively affected by poor genetic make-up. The average milk yield is at 5 litres per dairy cow per day, while the carcass weight for beef animals is at 120 kg. To increase the overall productivity, these two parameters need to be improved through breeding using superior genetics.

The country has a large and diverse reservoir of animal genetic resources. However, database on species and breed diversity, population sizes, trends and distribution is inadequate and only available for a few species, as no inventory and characterization has been undertaken. Therefore, there is a need for complete inventory, characterization and documentation of animal genetic resources for conservation.

The responsibility of producing and supplying breeding stock lies with the farmers. In the past, the Government had been supplementing this effort through its multiplication farms and Artificial Inseminations Services. Unfortunately, livestock multiplication farms have been unable to cope with the high demand

for quality breeding animals due to low investment for breeding stock and infrastructure development.

The major challenges facing production and supply of breeding stock include high mortality rate of young stocks and inadequate breeding and recording services. The AI services are under-performing as a result of un-preparedness during the privatization and consequently low uptake of the service by the private sector. The service is also constrained by weak regulation. Consequently, this has resulted in indiscriminate cross-breeding leading to inbreeding and poor breeding records, which have impeded the development of quality breeding stock. Currently, the cost of breeding animals is beyond the reach of most smallholder farmers. These challenges need to be addressed urgently.

Farmers, community-based organizations (CBOs), NGOs, breed associations and the Government are all involved, in one way or another, in management of Animal Genetic Resources. Breeding services are facilitated by the Kenya Stud Book, the Livestock Recording Centre, the Central Artificial Insemination Station, the Kenya National Artificial Insemination Service and the Breed Associations. There should be established a central authority for recording animals and regulating breeding programmes and to undertake other relevant tasks related to self-sustained breeding schemes in the country.

(ii) Feeding and nutrition

Livestock feeding and nutrition is another factor that determines productivity of the various livestock breeds. The main livestock feeds consist of roughages, concentrates, minerals and vitamins. The greatest proportion of diet for ruminants is roughages, which include grass and browse. However, in low rainfall areas, where extensive livestock keeping is practised, there is minimal supplementation with concentrates and minerals.

In high rainfall areas, concentrates make a significant proportion of livestock diet. Here, the cost of producing roughage sources is high compared with the low rainfall areas where no inputs are used. Grazing animals (cattle, sheep, goats, camels, donkeys, etc) are basically fed on natural pastures or fodder with supplemental concentrates for high yielding animals. In other words, the animals in the high and medium rainfall areas are fed on improved pastures and fodder,

while in other areas they are fed on natural pastures. Some of the challenges in these regions include inadequate research on suitable forages, forage crop diseases, unavailability of planting materials and lack of skills on forages management.

The non-grazing animals such as pigs and poultry, are fed on concentrates that are mixed to meet nutrient requirements. The concentrates used originate from cereals such as maize, wheat, barley, oats, millet and sorghum, legumes and oilseeds cakes such as soybeans, cotton seed cake and sunflower, and animal by-products such as fish meal, blood meal, meat and bone meal. Inconsistent supply of some of the ingredients, especially the imported ones – oil-seed cakes and meals, finer mineral elements, fish meal, vitamins and amino-acids – has a major effect on the feed quality.

Utilization of rangelands for sustainable livestock production is hampered by seasonal variations of quality and quantity of forage, overstocking and overgrazing, tsetse infestation and communal conflicts. Inadequate livestock support services, credit facilities, socio-economic services and weak infrastructure also limit utilization of rangelands.

Forage conservation is done as standing hay (particularly in the ASAL), baled hay or as silage. Forage conservation is not widely practised. There is need to promote forage conservation in these areas in order to ensure feed availability during unfavourable conditions and feed scarcity for increased livestock productivity. This will include using various conservation technologies and establishing strategic feed reserves.

The country has a wide range of agro-ecological zones, which favour production of a number of cereals and leguminous crops. These crop residues could be mixed with other fodders or processed for feeding animals especially during the dry season. Utilization of crop residues is constrained by inadequate knowledge in utilization of crop residues, limited conservation technologies, low nutritive values, post-harvest losses and bulkiness.

Concentrate feeds composed of protein, energy, minerals and vitamins are important especially for poultry, dairy and pig production. These feedstuffs account for up to 80 percent of production costs of farm animals. Optimum productivity of animals largely depends upon the adequacy of all essential nutrients in rations. Production of these feedstuffs is constrained by low quality of ingredients, seasonal availability of raw material, inadequate credit facilities,

inadequate raw materials, inadequate knowledge on feed formulation, high cost of production and lack of self-regulation by the industry. To promote production of concentrates for increased production and productivity of livestock, there is need to support farming of various crops for use as raw materials and enforce quality control.

(iii) Strengthening livestock extension services

Extension services are an important prerequisite for promoting technology uptake and eventual utilization by end-users for increased productivity. Over the years, low funding and low staffing levels have hampered the production and dissemination of information on livestock technologies to livestock farmers, resulting in poor performance of the livestock sector. Currently, the sub-sector has only 20 percent of its authorised extension staff establishment, a situation that is likely to deteriorate in the next few years due to natural attrition and staff retirement.

This strategy will explore avenues through which livestock extension services in Kenya will be revitalized. In particular, more resources will be committed to increase staffing levels towards the norm of 1 livestock extension officer to 500 farmers in high potential areas and 1 to 150 farmers in low potential areas to improve service delivery.

(iv) Improving livestock disease and pest control

Disease and pest control are key inputs for increased livestock productivity as they serve to reduce the potential loss of output associated with disease incidence and/or pest infestation. Since the adoption of SAPs in the 1990s, the public provision of clinical disease and pest control services were placed under the private sector. However, low private sector presence, owing to thin and sometimes missing markets in various parts of the country, led to poor service delivery thereby compromising livestock productivity. As a result, Kenya has virtually lost its international market share for livestock and livestock products. In addition, notifiable diseases which had hitherto been brought under control such as the contagious bovine pleuropneumonia (CBPP), contagious caprine pleuropneumonia (CCPP) and foot and mouth (FMD), are now being widely reported.

Zoonotic diseases, particularly those transmitted through milk such as tuberculosis and brucellosis, are also assuming significance. Besides, the country faces new challenges from emerging and re-emerging diseases such as the avian influenza, Rift Valley fever and *Peste des Petit Ruminants* (PPR), which require rapid but expensive response to contain. This strategy will support efforts to reduce disease and pest menace through the establishment of Disease Free Zones, building farmers' capacity to adopt and utilize appropriate and cost-effective livestock husbandry practices and the establishment of collaborative linkages. This will be through various forums, with stakeholders and neighbouring countries for increased surveillance, management and control of local and trans-boundary diseases.

5.2.3 Integrated development and management of rangelands

The ASALs constitute 80 percent of Kenya's total land surface. These areas support over 25 percent of the human population and have over half of the country's livestock population. They are also characterized by fragile ecosystems with scarce and erratic rainfall patterns. Despite the enormous livestock potential, development in these areas has been low compared with the rest of the country.

Pastoral and agro-pastoral production systems currently make the best use of natural resources in the rangelands. Pastoral systems are changing with increasing sedentarization due to changing lifestyles, land tenure and adoption of crop production in marginal lands.

Over the recent years, the frequency and severity of drought has been increasing. This coupled with overstocking and degraded environment has had a devastating effect on pasture regeneration and livelihood of pastoral communities. After a drought incident, land resource takes longer period to recover and in most cases recovery is never achieved because of the short interval from one drought to the next. Natural seed banks in the soil have been depleted to the extent that even with adequate rainfall no reasonable grass and other palatable vegetative material re-generates. In addition, uncontrolled water development has negatively affected the environment.

During periods of extreme drought, it is virtually impossible to control migration of livestock to areas with better pastures. This invariably leads to spread of diseases to most parts of the country with the attendant economic losses if concomitant

disease control measures are not put in place. Other effects of livestock migration are conflicts over use of pastures and water, and environmental degradation. Ensuring that pastoralists have adequate feeds for their livestock will, to a large extent, control movements especially those experienced during times of drought. With the changes in land use patterns, it becomes important that appropriate interventions are introduced to enable pastoralists cope with these changes.

The chronic shortage of pasture and water during the dry spells in the rangelands, and the associated suffering of the pastoralists during these periods, could be minimized and eventually arrested. To restore the rangelands into productivity, reseeding and range pitting, bush control, soil conservation and water rehabilitation and development need to be undertaken.

Soil erosion is a major contributor to range degradation and time has come for the relevant stakeholders to come up with a strategy to combat its destructive effects, as is the case in the crop production areas. Wind is the main agent of soil erosion especially in areas where vegetation cover has been cleared. The most affected areas are settlements and watering points.

To combat and reduce the effects of soil erosion in the rangelands, there is need for best management practices that will conserve vegetation cover while avoiding livestock concentration in one area for long. Where serious degradation has taken place, interventions such as reseeding, deferred grazing and other natural resource conservation measures will be implemented.

Since rangelands are characterized by low and erratic rainfall patterns coupled with high evaporation rates, lack of water is one of the major development problems among the pastoral communities. Water availability is a precondition for improved livelihoods and utilization of the natural resource base. However, haphazardly planned and poorly developed water sources and facilities have contributed significantly to land degradation in the pastoral areas. There is need, therefore, to involve all stakeholders before the process of water rehabilitation and development can be undertaken to ensure minimal water use conflicts through proper water distribution and maintenance. To improve livestock productivity in the rangelands, there is need to increase water harvesting and management that includes pans, water holes, dams, run-off diversion from roads and limited boreholes programme.

Disease control, including disease-testing systems along stock routes to the markets, is crucial for livestock marketing. Other support facilities that are prerequisite for development in the rangelands include road and rail transport systems for the rapid extraction of animals to the markets, electricity supply and communication.

Ranches have the potential to play a key role in the breeding, finishing and marketing of livestock. The options currently available for ranchers to intensify production are through improvement of breeds, pastures management and conservation and use of urea-molasses-mineral blocks especially during the dry spell. Intensive beef production in feedlots may also be profitable where a particular market niche demanding a guaranteed quality is available. There is need to provide support to ranches for breeding stock, forage conservation, livestock water and development of farm infrastructure.

5.2.4 Improving animal health and quality assurance

Animal health and quality assurance services are crucial in increasing productivity and reducing losses along the production and marketing value chains and in the promotion of local and export trade. The service also protects humans from zoonoses and diseases transmitted through consumption of animal products like meat, milk, eggs and honey. The prevalence of diseases and pests has led to heavy negative economic impact, loss of livelihoods, loss of human life and curtailed access to markets for animals and animal products. Further, misuse and abuse of pesticides, veterinary drugs and vaccines have not only led to unnecessary financial waste by animal owners, but have also introduced residues to the food chain thereby predisposing humans, animals and the environment to toxicity and anti-microbial resistance.

Bodies that address these concerns are the Department of Veterinary Services, Pest Control Products Board, Pharmacy and Poisons Board, Kenya Veterinary Board, Kenya Bureau of Standards and the Ministry of Health. These bodies are expected to regulate and monitor aspects of animal health services, license the use of pesticides, veterinary drugs and vaccines and undertake other quality assurance and sanitary measures. Though the mandates of these bodies are different, overlaps are occasionally encountered leading to duplication of efforts.

Examples are aspects of the Meat Control Act with respect to meat inspection administered by the DVS and same aspects in Public Health Act administered by the Ministry of Health and Ministry of Fisheries Development. Another example is Veterinary Medicines used in the Ministry of Livestock Development, but which are regulated by the Ministry of Health.

In order to strengthen these services, the livestock sub-sector, in collaboration with the private sector and stakeholders, will reform the legal, regulatory and institutional frameworks, build capacity for delivery of animal health and quality assurance services and domesticate, and implement regional and international sanitary measures.

5.2.5 Improving livestock market access

Access to markets is a precondition for livestock development. Economic growth of livestock producers will depend on fair market access to their livestock products. The most important factors that determine access to markets for livestock producers include household characteristics (in particular proximity to markets, membership to producer organizations and market information) and broader institutional architecture as well as livestock marketing and processing facilities.

In order to improve on access to markets, capacity building in the market chains will be addressed and infrastructure developed to support access to markets. In particular, organizing livestock producers to marketing groups, developing markets and supporting infrastructure, including livestock marketing information system, will be addressed to improve access to markets.

Since the late 1990s, global trade in agricultural products has been characterized by a gradual increase in sanitary and phytosanitary barriers. For instance, BSE and FMD have led countries over the years to impose import bans and stricter sanitary requirements, as well as other technical barriers such as requirements on labelling and animal traceability schemes. To access the expanding international markets, research and sanitary interventions will be implemented with the aim of enabling the country to satisfy the growing demand of high quality livestock products and by-products in local and international trade thereby allowing producers to benefit from increased

livestock demand worldwide. In addition, the country will conduct trade mission and bilateral agreements to increase market outlets.

A characteristic feature of Kenya's agricultural sector is the dominance of primary production with very little on-farm and off-farm processing of livestock products. This translates into low income for farmers. To maximize the income from the livestock sub-sector, efforts will be made to intensify value addition of livestock products. Agro-processing will contribute immensely to the country's industrialization and lead to improvement of rural incomes by adding value to products, save on transport costs by delivering high value/low volume products and create opportunities for the use of by-products as inputs. It will also provide opportunities to convert perishable commodities into more durable products and help create jobs thus contributing to poverty reduction.

Value addition in hides, skins and leather should be prioritized as a strategic transitional economic development activity towards the realization of industrialization strategy. This is as envisioned in the industrial transformation to the year 2020 (SPN-1 1996) as a joint venture between private and the public sector.

5.2.6 Establishment of a centrally coordinated livestock database

Livestock census has not been undertaken since 1966 and data used has always been estimated. Information on livestock supply and demand is not available in a coordinated central database. There is need to carry out livestock census and establish a database to monitor demand and supply of livestock and livestock products as well as for planning purposes.

5.2.7 Implementation of disease free zones

Establishment of disease free zones is a Vision 2030 economic flagship programme under the livestock sub-sector. The programme will facilitate access of livestock and livestock products to local, regional and international markets. Strategically-placed zones will be identified in the country. In these zones, eradication of trade-sensitive diseases will be achieved through implementation of sanitary measures consistent with international standards. International markets are more lucrative

as compared to local markets and access to them will increase the productivity and earnings from the sub-sector thereby improving sustainable rural livelihoods, food security and national economy.

In order to facilitate implementation and attainment of the objectives of the programme, institutions in the livestock sub-sector will be strengthened. Within the disease free zones programme, there will also be investments in livestock breeding, range improvements, export abattoirs and livestock marketing and marketing infrastructure to raise the quality, quantity and value of processed meat animals that Kenya can export. The country's milk exports will also benefit from enhanced disease control measures in the highlands.

The programme for the establishment of disease free zones will, therefore, be implemented through the following components:

(i) *Animal health improvement:* This will involve strategies and interventions that are geared towards the control and eradication of trade-sensitive diseases, zoonoses and pests and quality assurance of livestock products.

(ii) *Infrastructure development:* To facilitate establishment of disease free zones, the programme will rehabilitate and construct disease control, animal handling and marketing infrastructure. Quarantine stations will be erected and strategic holding grounds and outspans will be rehabilitated and developed.

(iii) *Improving animal productivity:* Through this component, livestock breeding programmes will be enhanced to improve local breeds and achieve faster growth rate and greater slaughter weights.

(iv) *Improvement of rangeland:* This component will undertake activities geared towards improving rangeland management.

(v) *Improving livestock marketing:* This component will revamp livestock marketing so that it can take a lead role in international meat trade and bring in the expected benefits to livestock producers and other value chain players.

(vi) *Strengthening institutions:* This will be done through capacity building in relevant offices and laboratories as well as staff training on zonation and other sanitary measures.

5.3 Fisheries Sub-sector

The fisheries sub-sector plays an important role in the national economy, providing economic support to about 80,000 people directly and about 800,000 indirectly (assuming a dependency ratio of 1:10). In 2006, it contributed 0.5 percent to the GDP. This figure can be higher if value addition of the various stages of the supply chain is considered and post-harvest losses are minimized.

The sub-sector growth was estimated at 4.1 percent in 2005. In the same year, a total of 158,670 metric tons of fish valued at over Kshs 8 billion was produced in the country. Fish exports in the same year earned the country approximately Kshs 5 billion. Despite Government commitment and past interventions, the sub-sector has been unable to realize its full potential due to lack of a fisheries policy, inadequate supportive infrastructure such as cold storage, roads, fish port and electricity as well as inadequate budgetary provisions, environmental degradation due to invasive weeds (such as water hyacinth and exotic species), weak fisher producer organizations, lack of collateral and access to credit facilities, absence of a saving culture, ineffective marketing information and lack of adequate and quality fish seeds and feeds. In addition, inadequate research-extension linkage, Illegal, Unregulated and Unreported (IUU) fishing, weak Monitoring Control and Surveillance (MCS) systems, low fishing technology, stringent sanitary and phytosanitary standards set by major export destinations, tariff and non-tariff barriers to international trade and diminishing fish stocks have also been a major hindrance to the development of the sub-sector.

In order to address these challenges and constraints, the fish sub-sector will pursue the implementation of the following intervention strategies:

(i) Development of marine capture fisheries

(ii) Development of inland capture fisheries

(iii) Development of aquaculture

(vi) Promotion of fish safety, quality assurance, value addition and marketing.

5.3.1 Development of marine capture fisheries

The marine fishing industry in Kenya is characterized by underexploited resources and an over-fished artisanal fishery. The current inshore fish production is about 7,794 metric tons valued at Kshs 635 million which is approximately 5 percent of

the total annual landings. Though the country's coast is located within the rich tuna belt in the South West Indian Ocean, the production from the off-shore waters is not yet established because the Distant Waters Fishing Nations (DWFN) fleets do not land, trans-ship or declare catches in Kenyan waters.

However, the marine fishery potential is estimated to be 150,000 metric tons and the main species are the highly valued tuna and tuna-like fish species in the Exclusive Economic Zone (EEZ). This fishery is currently exploited by foreign vessels, which land their fish harvest in off-shore island states in the Indian Ocean due to absence of a fish port in Kenya. Exploitation of this resource and landing of the harvest in Kenya's coastline can greatly contribute to food security, employment, wealth creation and raw materials for domestic food and the feed industry.

Through adequate and strategic investments, proper resource management, reduction in post-harvest losses and value addition, marine fisheries exploitation has the potential of doubling fisheries contribution to GDP from the current Kshs 13 billion to Kshs 26 billion by 2014. This strategic investment should also target to give Kenya a regional competitive advantage by attracting foreign fishing vessels operating within the country's EEZ to off-load their harvests at the country's coastline.

To tap this potential, Kenya immediately requires a fish port with adequate infrastructure to handle up to 500 fishing vessels a day. This port should be constructed at Lamu to enable exploitation of the commercial fishery in the northern Kenya coastal waters which is within the Somalia upwelling system.

To develop and operationalize the fish port, the Government will need to support the development and maintenance of the fish port. Further support will be needed for the establishment of a fisheries coast guard unit to conduct shoreline and sea-based surveillance. In addition, mechanism will be put in place to facilitate the formulation of Joint Partnership Agreements and initiate negotiation processes aimed at engaging foreign fishing vessels into fishing partnerships and MCS systems in the EEZ.

5.3.2 Development of inland capture fisheries

In 2006, about 94 percent of the country's national annual catch was landed from the fresh waters of Lakes Victoria, Turkana, Baringo, Naivasha and Jipe, and Tana

River dams by some 38,000 fishers, who are mainly artisanal, operating 12,284 fishing boats. Thus, the inland capture fishery is overexploited and over-fished operating beyond the maximum sustainable yield. If this state of affairs is not reversed, it can lead to a total collapse of the fishery.

To reverse this decline in fortunes, there is need to reduce post-harvest losses by improving sanitary and phytosanitary facilities, improve fish landing facilities and the cold chain, enhance collaboration between the three East African states on issues affecting fishery and catchments of Lake Victoria and encourage common fishery management measures, alternative income generating activities and encourage duo state/private fisheries co-management practices. Another avenue is to focus energies on the unexploited fishery resource of Lake Turkana. The lake contains significant quantities of Nile perch and tilapia, the two most prized freshwater fish in the country. A conservative potential estimate of landing in the lake is 30,000 metric tons valued at about Kshs 3 billion. For the riverine systems, restocking programmes and demarcation of fish sanctuaries and refugia sites should be supported and protected.

5.3.3 Development of aquaculture

Aquaculture is an important fisheries development that involves the culture of aquatic organisms in a controlled environment in marine and freshwater systems. It is mainly subsistence with a few commercial fish farm enterprises; hence, it can easily be integrated into household farming systems. The current aquaculture production is 1,000 metric tons valued at Kshs 137 million which is about 1 percent of the National Fish Value. If well developed, it has the potential to contribute to food security and reduce poverty and pressure on capture fisheries.

The country is endowed with considerable potential and climate that can support commercial fish culture in both marine and freshwater areas. If the national aquaculture potential is fully utilized, fish production can increase from the current 1,000 to 15,000 metric tons valued at about Kshs 1.1 billion and support about 10,000 large and small-scale farmers. This will also reduce pressure on capture fisheries leading to sustainable utilization of other fisheries resources. This enhanced productivity can be achieved by supporting research in certified fish seed and feed production, formulation and implementation of aquaculture

business plans, establishment of Public-Private Partnerships (PPP) in fish seed and feed production, development of an aquaculture policy and legislation, development of the aquaculture master plan and investment plan, and support to fisheries participatory extension services.

5.3.4 Promotion of fish safety, quality, value addition and marketing

Fish is a highly perishable product, a factor that has been used by middlemen and fish factory owners to exploit fishermen by forcing them to sell their catch at low prices. One of the solutions to this acute problem is to develop fish auction centres complete with cold chain facilities and sanitary market facilities to hold fish until fishermen have a properly bargained price. These centres will be at landing sites on the shores, while cold chain facilities will be developed at the airports.

The bulk of fish exports and fishery products from Kenya comprises products that have undergone minimal processing with no added value such as whole, headless and gutted Nile perch, Nile perch fillets, frozen Nile perch maws, tuna loins, Nile perch skins, octopus and lobsters. This deprives the country optimal earnings as these products either undergo further processing to add value or are branded after export thus fetching higher prices in the market.

A lot of opportunities exist in the development and production of value added products from various low valued products such as Nile perch frames, fish skins, fish heads, fat and fish bladders, all of which contain a lot of omega-3 fatty acids which can be traded in both the local and international markets. Other opportunities exist in the setting up of fish canning establishments to target species such as the sardine-like *Rastrineobola argentea* (locally known as omena) and tuna. Value addition and utilization of the often discarded by-catch from prawn trawling is also another area of investment.

5.4 The Cooperatives Sub-sector

Agricultural cooperatives have been instrumental in bulking, processing and transporting of produce on behalf of the members. They have also played an important role in the provision of credit and supply of farm inputs to members. The performance of secondary cooperatives in the sector such as Kenya Planters

Cooperative Union (KPCU), Kenya National Federation of Cooperatives (KNFC), District Cooperative Unions and commodity specific unions' has declined due to a number of reasons, among them mismanagement, failure to adapt to the challenges of competition and withdrawal of financial and technical support. These institutions are vital for agricultural development as they own a national network for storage and distribution facilities for agricultural inputs such as fertilizers, seeds, chemicals and equipment. In the process, members' investments continue to be lost as assets continue to be stripped. Cooperatives have not harnessed economies of scale and the comparative advantage inherent in them. Poor collaboration, lack of networking and competition amongst themselves is evident in the sub-sector.

Moreover, a large part of cooperative business is based on commodity transaction with very little product differentiation. Lack of market and product research has led to limited product development and market penetration. Most cooperatives have not embraced value addition and processing including packaging and branding, thus losing out on potential returns and benefits to their members/ producers. As a result of this, the sub-sector has almost stagnated. Agricultural marketing cooperatives are characterized by low capital investment as capital formation has not been commensurate with the growth of cooperative business.

5.4.1 Increasing market access and agri-business

Agricultural marketing cooperatives constitute approximately 46 percent of all cooperatives in the country with 3 million members out of the entire membership of 7 million countrywide. Following liberalization, cooperatives have witnessed major changes in business environment, characterized by the emergence of a competitive market economy. Among the changes was the withdrawal of direct state involvement in the day-to-day operations of cooperatives. Their capacity to face the challenges brought about by the liberalization policy has been inadequate. As a result, their performance has been on decline with subsequent loss of confidence by the members. This has negatively affected agricultural productivity and market share.

To counter this trend, cooperatives will be revitalized and their capacities strengthened so that they can remain competitive. This will involve education and training, improving governance and management, enforcing legal provisions,

adopting prudential standards, developing appropriate marketing strategies and establishing a regulatory framework for SACCOs. Cooperatives will pursue business models that will embrace innovation and modern technology transfer including adoption of ICT in their operations.

In the process of fulfilling their functional mandates, cooperatives are faced with many challenges that affect service delivery to their members. These challenges and constraints, which are both internal and external, are in the areas of governance and management, value addition on members produce and poor access to market information.

Up-to-date and relevant information is crucial in a market-based economy. Market information and access in the sub-sector is poorly developed. The sub-sector lacks an integrated agricultural data and information management system. The scope and geographical coverage of market information is also limited due to underdeveloped infrastructure for dissemination.

In order to address these challenges and constraints, the cooperative sub-sector will implement the following intervention strategies:

(i) Reviewing cooperative development policy and legal framework

(ii) Improving capacity for marketing of agricultural inputs and produce

(iii) Enhancing access to agricultural credit

(iv) Promoting value addition

(v) Promoting internal and external trade

(vi) Improving governance and management.

5.4.2 Cooperative policy and legal framework

Currently all cooperatives are governed by the Cooperative Societies Act amended in 2004. However, the Act was amended before the cooperative policy was revised. Therefore, it is not consistent with the provisions of the cooperative development policy. In addition, the Act in its current form has a number of gaps and omissions such as lack of a clear way to effectively cater for all categories of cooperatives. The Government has enacted the SACCO Regulatory Act, whose implementation will involve the establishment of a SACCO regulatory authority.

5.4.3 Marketing of agricultural inputs and produce

Marketing presents a major challenge to the agricultural sector. Productivity of the sector is constrained by inefficiencies in the supply chain. Supply-side inefficiencies result from limited storage capacity, lack of post-harvest services and poor access to input markets. Exploitation by middlemen also creates distortions in the market. Many primary marketing cooperatives have, therefore, lost business due to weak internal marketing capacity, weak capital base, loss of monopoly, protection previously enjoyed by some societies, inadequate trained personnel to deal with modern ways of marketing, limited value addition initiatives and delayed payments for delivered produce.

Agricultural exports have relied heavily on a few key markets. In order to improve on this, the cooperative marketing promotion will focus on (i) enhancing the marketing promotion capacity of the relevant sub-sector ministries and (ii) strengthening of the marketing capacity within the cooperative societies.

Equally important in the sector is the capacity of cooperatives to compete in a global marketing environment. Capacity building of members, officials and staff needs to be enhanced through training and provision of technical support, policy guidance, technology transfer and access to marketing information. Mainstreaming of the marketing activities in the sector is core to the business operations. Currently, this function is peripheral in the sector. Policy direction on cooperative marketing should be spelt out to guide the cooperative sector.

The low productivity levels in the agricultural sector is attributed to a number of factors, including high cost of inputs (fertilizers, pesticides, veterinary drugs, animal feeds and seeds/planting materials), poor husbandry practices, outdated extension approaches, over-dependence on rain-fed agriculture, lack of markets and limited application of agricultural technology and innovation. Cooperative societies will play a role in addressing these constraints, especially those related to accessing the various agricultural inputs. The cooperative societies have traditionally been useful in facilitating aggregation of members' input requirements and then purchasing centrally in order to create economies of scale and save costs to individual members. Further, cooperative institutions have extensive supply stores throughout the country that could be useful in improving access to fertilizer and other inputs by the producers.

In order to contribute to increased agricultural productivity, two strategies will be adopted namely (i) bulk purchasing, and supply through a nationwide distribution network, and (ii) long-term opportunities for domestic production. In the medium term, the measures to lower the cost of fertilizer will include revitalizing or re-incorporation of those national cooperative institutions that were extensively involved in bulk purchase and distribution of inputs to perform roles of input marketing.

Cooperatives play a critical role not only in the supply of major farm inputs, but also in influencing competitive pricing. However, the supply and pricing are often affected by capital constraints, sourcing of inputs, lack of skills in importation business and restrictive domestic laws which limit investment by potential competitors. Consideration, therefore, will be given to the distribution of inputs in rural areas through existing cooperatives such as commodity marketing, merchandise and inputs supply societies. Franchising, networking with manufacturers and wholesalers on bulk purchases and stocking will also be encouraged. The Government will encourage the formation of cooperative structures that will create the necessary capacity to trade in large volumes of inputs to take advantage of economies of scale.

5.4.4 Access to agricultural credit

The main focus of Savings and Credit Cooperatives (SACCOs) is, first, to offer affordable financial services on a cost-effective basis to cover a large number of the cooperative membership. Secondly, they provide an alternative system for securing credit instead of utilizing the formal collateral system. This leads to empowerment of the farmers. The promotion of savings and credit societies among the salaried, wage earners and farmers will be encouraged in order to improve members' access to credit and other financial services.

5.4.5 Value addition

A characteristic feature of Kenya's agriculture is the dominance of primary production. There is very little on-farm and off-farm processing of agricultural produce. A large number of cooperatives handle mainly raw produce from

members which is delivered to processors for value addition and marketing. This often translates to low prices, less job opportunities and eventually low income for farmers and members.

In addition, within the commodity marketing cooperatives, minimal effort has been made to improve on the quality and shelf-life of their produce. Cooperatives still engage in the raw production thereby marketing their produce in crude or semi-processed form. Again, this makes members lose a substantial part of their income to middlemen and processors, making the situation become even more hopeless when dealing with perishable produce such as milk and horticultural products. Vision 2030 has identified value addition as key in driving economic growth.

The above situation provides compelling reasons for encouraging agro-processing with the following outcome: firstly, it improves rural incomes by adding value to produce, thereby saving on transport costs by delivering high-value/low-volume products and creating opportunities for the use of by-products as inputs in other farm operations such as animal feeds, manure and fuel. Secondly, it provides an opportunity for reducing farm losses through the conversion of perishable commodities into more durable products. Lastly, it helps create jobs in the rural areas, thereby contributing to the reduction of both poverty and rural-urban migration.

In this connection, the Government will strengthen the complementarities and inter-dependence of the agricultural sector with the agribusiness by promoting forward and backward linkages and prioritizing rural industrialization. Where contractual obligations can be enforced, forging partnerships between smallholders and agribusiness in the form of out-grower and contract farming schemes will be encouraged. Such partnerships will allow smallholders to enjoy assured markets for their products and the supply of inputs on a credit basis or through input voucher schemes. Contractors also benefit from an assured supply of commodities of higher quality. Such schemes are currently in use for some few commodities.

5.4.6 Promoting internal and external trade

Trade in agricultural inputs and produce is an important activity for generating income and employment and, thus, reducing poverty as well as promoting food security. The main constraints to internal trade include high transport costs due to poor state of roads and high wastage of perishable commodities due to lack of proper handling and storage facilities. In the case of livestock trade, lack of cattle holding grounds and interference with stock-routes has led to limited access to domestic markets.

Opening up of trade contributes immensely to higher economic growth while trade barriers limit development. In view of the limited size of the domestic market, Kenya has to take advantage of the opportunities presented by globalization to achieve significant growth and development. This requires attainment of a certain level of global competitiveness. In addition, due to the limited arable land area, the only way of assuring food security is to access global food supplies. The protection that is currently provided to maize, rice and sugar farmers needs to be progressively removed, while measures should be taken to increase productivity so that farmers can focus on the production of commodities which can face global competition effectively.

The competitiveness of Kenyan produce has been undermined by costly and inadequate infrastructure services such as poor roads and railways that increase vehicular maintenance costs, high port and road charges and tariffs, slow and outdated communications systems as well as infrastructure that impede the flow of market information.

Kenya is signatory to various trade protocols and agreements within the East African Community (EAC), the Inter-Governmental Authority on Development (IGAD), the Common Market for Eastern and Southern Africa (COMESA), the World Trade Organization (WTO), and the European Union (EU) which, if imaginatively applied, could bring benefits to Kenyan farmers.

To ease the export and import of commodities in the regional markets, development of Dry Dock facilities at Kisumu, Busia, Bungoma or Malava, Nanyuki, Moyale and other towns will be pursued. The removal of barriers will substantially reduce the uncertainties and transaction costs faced by traders and

provide a clear signal to the private sector to plan production, processing and marketing for external markets instead of producing solely for subsistence and internal markets.

Integration of agricultural promotion activities will facilitate domestic and foreign investment in the sector. Moreover, it will help to increase existing market share as well as create opportunities for new markets. To facilitate greater integration more resources will be allocated to development activities.

5.4.7 Governance and management

Cooperative leadership has been slow in adapting modern management techniques in the running of cooperative enterprises. This has led to delayed and poor payments to their members resulting in decline in agricultural productivity and growth. Most agricultural cooperatives lack strategic focus and capacity to manage change due to structural weaknesses, poor focus and weak ownership at all levels. The performance of secondary cooperatives such as District Cooperative Unions and commodity specific unions is largely below expectations. In the process, members' investments continue to be lost as assets continue to be stripped.

Cooperatives have not harnessed economies of scale and comparative advantage inherent in them. Poor collaboration, lack of networking and competition amongst themselves is evident in the sub-sector. Many cooperatives with limited access to markets and streams of incomes are heavily constrained in attracting and retaining qualified and professional manpower.

Opportunities to develop networks and partnerships between cooperative societies to reduce internal competition amongst them exist. On the other hand, working with stakeholders to form joint ventures with the private sector, new initiatives such as Cooperative Private Partnerships (CPPs), getting direct investments in identified areas and working with the Export Processing Zone Authority to create Export Processing Zones in areas with active cooperative societies throughout the country, are some of the vast opportunities to be explored.

5.5 Private Sector Participation

Agro-based private sector comprise both profit-driven and not-for-profit (civil society) non-state actors. Such actors could be broadly categorized into farmers'/producer organizations that include the following: primary producers, individual farmers and producer companies, farmers/producer groups, producer organizations, commodity based associations, farmer federations and various categories of cooperatives, agribusiness firms, individual entrepreneurs, cooperative societies, agricultural input dealers, agricultural commodity processors and packaging agents, agricultural commodity transporters, agricultural commodity warehousing agents, financial service providers that include micro-finance institutions, commercial banks, SACCOs, development partners and agribusiness development (ABD), technical/professional service providers, extension, research, insurance, legal, consultancy, quality assurance and education training and information as well as civil society, NGOs, FBOs, CBOs and international NGOs and, but not limited to, other resource mobilization organizations and opinion leaders.

Most of the private sector activities are coordinated under the umbrella body, the Kenya Private Sector Alliance (KEPSA). This is a coalition of private sector institutions including business associations, federations and professional bodies organized and coordinated into a single unit to engage the Government in structured consultations and policy dialogue processes towards improving the business environment, accelerating public sector institutional transformation, promoting the private sector cultural change, facilitating growth through trade expansion, improving productivity and competitiveness of enterprises and supporting entrepreneurship and development of micro and small enterprises in line with the National Development Agenda. Private sector issues are consolidated into one major agenda cutting across all sectors of the economy in Kenya whereby individual organizations identify key priority areas and work together with the Government to find practical solutions to issues. This engagement is a joint effort driven by Public Private Partnerships (PPP) policy to yield strong and accountable commitments by the Government and private sector to work for a common goal in delivering results for Kenyans.

The Kenya National Federation of Agricultural Producers (KENFAP) coordinates and facilitates functions and processes of agricultural producers and producer' organizations along various agricultural value chains. Similarly, the Kenya National Federation of Cooperatives (KNFC) coordinates commercial agricultural services in line with producer management through a variety of cooperative societies. Currently, KENFAP chairs the Agricultural Sector Board of KEPSA, thus making it the private sector focal point on various consultations and functions under the PPP implementation framework in the agricultural sector.

In agriculture the private sector constitutes the beneficiaries and other stewards of agricultural resource mobilization for transformative economic operations. It is the vehicle for requisite investments to transform agriculture towards increased productivity, agribusiness and development of support or infrastructure. Its initiative draws its renewed strength and legitimacy from the Public Private Partnerships (PPP) in the framework of the National Economic and Social Council (NESC), National Business Agenda (NBA), the budgetary process' Sector Working Groups (SWG), Ministerial Stakeholders Forum (MSF) and Ministerial Taskforces (MTFs) created through *Kenya Gazette* Notice No. 7699 of 24th September 2004. The initiative builds and utilizes private sector capacities and synergies through collaboration, engagement and networking in order to promote efficiency and effectiveness in service delivery. The private sector will continue working closely with the Government to ensure service delivery to producers and other players in the sector. To do this, the private sector will carry out the following interventions:

(i) Facilitating organization of smallholder producers at all levels

(ii) Development and implementation of a framework and instruments for strengthening institutional capacity of producer organizations

(iii) Fast tracking the legal and regulatory reforms to promote private sector engagement

(iv) Promotion of private sector participation in agricultural transformative services

(v) Development of a mechanism for recognition and support to integrated agricultural product value chain innovations.

6 PRODUCTION FACTORS STRATEGIC FOCUS

6.1 Improvement of Water Resources and Irrigation Development

Irrigation accounts for only 1.7 percent of the total land area under agriculture, but contributes 3 percent to the GDP and provides 18 percent of the value of all agricultural produce demonstrating its potential in increasing agricultural production and productivity.

Kenya has an estimated irrigation potential of 1.3 million ha and a drainage potential of 600,000 ha. Currently, 114,600 ha of irrigation and 30,000 ha of drainage have been developed. Of the available irrigation potential, 540,000 ha can be developed with the available water resources, while the rest of the area will require water harvesting and storage.

The developed irrigation potential can be categorized into the following three main types: smallholder schemes, 49,000 ha, (43%); public/national schemes, 20,600 ha, (18%); and, private schemes, 45,000 ha (39%). The remaining potential of over 424,400 ha and 570,000 ha of irrigation and drainage calls for increased focus to unleash this potential.

Less than 20 percent of Kenya's land mass has high to medium agricultural potential supporting about 75 percent of the population. The remaining over 80 percent lies in the ASALs, where sustainable rain-fed production of crops is limited by water deficits. This clearly shows that there is pressure on land with agricultural potential and population migration to the ASALs is likely to increase. Moreover, it is an indication that the country is poorly endowed with potential for rain-fed agriculture. This means that rain-fed agriculture alone cannot meet the challenge of achieving food security.

African Governments, regional bodies, development partners, and agricultural and other stakeholders meeting in Maputo in 2003 identified irrigation as a

priority area for investment to accelerate agricultural growth. Agricultural production through irrigation can be increased by up to 300 percent and create jobs at the rate of up to 15 persons per acre directly and indirectly. Irrigation could also guarantee a reliable supply of raw materials for agro-industries and improve national security by creating opportunities for the youth to be economically engaged while stemming rural-urban migration.

The impact of Mwea Irrigation Scheme on the economy of Kirinyaga District, of irrigated horticultural production in parts of Central Province, and of irrigated floriculture in the national economy demonstrates the potential of irrigation in national economic growth. In the face of adverse impacts of climate change, expanding irrigation through development of sustainable production systems will contribute to the stabilization and subsequent growth of agricultural production.

In addition to land resources, sustainable irrigation requires adequate and reliable water resources. Currently, the country has about 4,100 small dams and water pans giving a total water storage capacity of only 183,662,000 m^3 for all uses, equivalent to 5.3 m^3 per capita per year, which is among the lowest water storage rates in the world and equivalent to only 3 months use. As a result, if the country does not receive rains for only three months, it experiences famine, low irrigation levels and even power rationing.

Surface and groundwater, and its quantity and quality, are of great interest to the irrigation sub-sector. The availability of sufficient water resources to support it is under continuous and increasing pressure from other economic development activities. There is, therefore, need for well-targeted actions in the rehabilitation and management of watersheds or catchments in order to increase the country's water resource base.

In areas that experience higher rainfall, incidents of flooding are common as a result of heavy run-off causing rising siltation and sedimentation to water bodies. Increasing industrial and domestic waste-water pollution of water bodies is threatening the quality of water available for agricultural production. In some areas, the quality of groundwater sources has also been found to be unfit for agriculture.

The country's five "water towers" – Aberdares, Mt Kenya, Mt Elgon, Cherangani Hills and Mau Forests – have and continue to suffer from forest clearance and

land use changes as a result of which many lakes and rivers have already reached critically low levels. Across the country, perennial rivers such as Ewaso Nyiro have been reduced to small streams during the dry season, while others have disappeared from the map altogether. The lifespan and storage capacity of dams is also steadily decreasing due to siltation arising from degradation of the catchments and watercourses, while the frequency of change of water courses is increasing.

In view of the foregoing, water resources management and development cannot be viewed in isolation, but as an integral part of the resources of watersheds. Properly managed and developed watersheds can contribute to sustainable flow and availability of water (blue and green in the form of soil moisture, groundwater and surface water). Therefore, managing water resources in an ecologically sustainable manner by taking into consideration proper land use and an integrated development of resources that involves agriculture (livestock, crop, fishery and agro-forestry), natural resources (forest, range, wildlife), environment and human resources is critical.

Sustainable development and management of irrigation has been constrained by:

(i) Lack of a national plan and policy, legal and institutional frameworks to guide irrigation development with the resultant problems such as duplication of efforts, wastage of scarce resources and haphazard interventions

(ii) Lack of adequate financial resources for investment in irrigation development caused by the high interest rates on loans and the requirement by commercial financial institutions for physical assets as collateral, which preclude many farmers from credit facilities

(iii) Limited and fragmented research on irrigated crops, water management, farm mechanization, soils and other issues that have hampered irrigation development resulting to application of inappropriate techniques leading to low yields and land degradation

(iv) Inadequate infrastructure such as electricity, access roads, marketing channels and extension services that has slowed the pace of irrigation and drainage development

(v) Inappropriate management system of public settlement irrigation schemes with minimal involvement of beneficiaries in their planning, development, operations, maintenance and management

(vi) Lack of security of land tenure, as land adjudication and registration has either not been done or is incomplete

(vii) Poor performance of some public and smallholder schemes due to inadequate farmer participation, low level of Government support services, weak farmers' organizations and poor communities' financial base.

In order to improve irrigation development and management, the water and irrigation sub-sector will address the identified challenges and constraints through the following intervention strategies:

(i) Finalization and implementation of the national irrigation policy and legal framework

(ii) Intensification and expansion of irrigation

(iii) Improvement of rainwater harvesting and storage for agriculture

(iv) Rehabilitation and protection of water catchments

(v) Implementation of the irrigation flagship projects.

6.1.1 The national irrigation policy and legal framework

The overall goal for this strategic intervention is to accelerate sustainable development of irrigation and drainage to contribute to the national goal of wealth and employment creation, food security and poverty reduction. This is also in line with the country's aspirations for transformation of agriculture as underpinned by Vision 2030.

The policy on irrigation and drainage seeks to achieve the following:

(i) Full development of the irrigation and drainage potential in the country for food security, employment creation, supply of raw materials and poverty reduction.

(ii) Effective promotion, coordination, management and regulation of the core activities within the irrigation and drainage sector.

(iii) Mobilization and increase of financial resources and creation of an appropriate financing system that will attract investment in the sector.

(iv) Increase in Government's financial allocation to the sub-sector to at least 2 percent of GDP annually.

(v) Creation of an enabling environment for effective farmers organization and participation and for other stakeholders to participate in the provision of quality and cost-effective support services.

(vi) Establishment and promotion of a multi-sectoral approach to sustainable irrigation and drainage development and management.

6.1.2 Intensification and expansion of irrigation

The sub-sector will accelerate the development of irrigation and drainage through the financing of the construction of major irrigation, drainage and flood control infrastructure. It will also adopt an integrated basin-wide approach to irrigation planning and implementation in order to attain the Vision 2030 target of developing 32,000 ha per annum and 704,000 ha of new irrigation areas by the year 2030.

To improve the performance and productivity of existing irrigation schemes, the sub-sector will invest in the rehabilitation and improvement of infrastructure for the schemes. On the other hand, Irrigation Water Users Associations will be strengthened to ensure that they have the capacity and resources to optimally operate and maintain the entire irrigation systems in schemes.

The sub-sector will adopt a multi-sectoral approach to irrigated agricultural production while encouraging and supporting the establishment of public-private partnerships with the aim of contributing to development efforts through provision and delivery of services (inputs, micro-finance, technology, value adding activities, market outlets, etc). The Government will also mobilize substantial funds from different sources for sector development.

In order to enhance productivity per unit of land, measures will be put in place to facilitate multiple cropping, improved yields through targeted research, better extension services, capacity assessment and building of staff and farmers and

strengthening of farmer institutions. The Government will also introduce impact assessment of projects to ensure that project goals and objectives, especially in terms of socio-economic benefits, are realized by the stakeholders.

6.1.3 Rainwater harvesting and storage for agriculture

The water sub-sector is developing a national water storage policy with an objective of increasing water storage from 183,662,000 to 25 billion m^3, which would provide enough water to irrigate an additional 800,000 ha above the current irrigation potential of 540,000 ha. It would also provide adequate water for livestock, secure water for all uses, raise the standards of the country's overall water resource management and ensure a water secure Kenya. Water storage through harvesting flash floods will also provide water for irrigation activities while reducing the damaging effects of flooding in areas such as Nyando, Budalangi and Kano plains.

The water sub-sector will also enforce the law that requires that each irrigation scheme develops 90-day water storage facilities for agricultural production to the full extent possible. Towards this end, the Government will invest in the development of storage facilities for smallholder and national irrigation schemes in compliance with the law. The sub-sector will also support and encourage water harvesting activities at household and community levels as an integral part of watershed development for use in irrigation, livestock and /or groundwater recharge.

6.1.4 Rehabilitation and protection of water catchments

Catchments degradation is causing increased run-off, flash flooding, reduced infiltration, erosion and siltation and this is undermining the limited sustainable water resource base in the country. It has invariably affected surface water availability as rivers and reservoirs dry up. The main causes of such degradation are poor farming methods, population pressure and deforestation for agricultural land and fuel wood. For example, the sediment yields for Ewaso Ng'iro and Tana Rivers have increased 115 times their level of 1970.

Over-abstraction of surface water in some parts of the country, inappropriate land use changes, soil erosion in catchments and deterioration of riparian lands are causing flash floods, turbidity and siltation of water courses and storage facilities have led to serious degradation in the quantity and quality of water resources. Poorly controlled discharge of effluent from industry and sewage outflows have also impacted negatively on the quality of water. The dramatic reduction in the depth of Lake Baringo, from over 15 metres in 1921 to an average of 1.8 metres today, is due not only to reduced inflows, but also to the increased sediment load from surrounding unprotected and degraded catchments.

The National Water Resources Management Strategy that was validated in January 2007 emphasizes that integrated water resources management must be elevated and recognized as a national priority which underpins all of Kenya's social and economic development. This is a process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems. Implementation is on course through various programmes, mechanisms and measures. However, massive investments are required to achieve and sustain this objective. Therefore, there is need for mobilization of resources from both internal and external sources.

6.1.5 Implementation of the irrigation flagship projects

The flagship projects identified in the Vision 2030 will be implemented. These include expansion of the schemes in Bura, Hola, Ahero, West Kano, Bunyala, Perkerra, Kerio Valley, Mwea, Taita Taveta, Ewaso Nyiro North and Ngurumani. In addition, the Yatta Canal will be extended by another 100 km to cover Yatta District, parts of Kitui and Mwingi Districts involving construction of a 1 km uptake dam upstream of the existing intake point along Thika River and repair of Mathauta and Munyu Dams to serve as the starting point of the extension of the canal.

The Kano Plains and Nzoia (Upper, Middle and Lower) Irrigation Projects will be implemented involving new areas each with a development potential of over 20,000 ha. The construction of the Tana Delta Project, aimed at irrigated

sugar production covering 16,000 ha, will be given the highest priority. These interventions will substantially increase cropland and boost agriculture, which was previously dependent on rainfall. Drainage areas will also be expanded in the provinces of Western (Busia, Kakamega, Butere, Mumias, Bungoma, Teso) and Central (Thika, Nyandarua North and Nyandarua South). Research will also be carried out to enhance efficiency and productivity of irrigated agriculture.

6.2 Land Use

Land is an important factor of production because it provides the foundation for all other activities such as agriculture, water, settlement, tourism, wildlife and forestry. Indeed, it is on land that infrastructural activities are built. Issues of land are important on matters pertaining to social, economic and political development of Kenya. The attachment the Kenyan people have on land makes it politically and culturally sensitive. Secure land tenure, sustainable land use planning and equitable distribution of land contributes immensely to food security, employment, foreign exchange earnings and growth of industries and social-economic development of a country.

Over the years, administration and management of land has been very challenging. This has been caused by lack of a comprehensive National Land Policy, which has been worsened by existence of many land laws some of which are incompatible. This has led to fragmentation of land, breakdown in land administration, disparities in land ownership, especially in high potential areas where most of it is idle. Other challenges include deterioration in land quality, squatting, landlessness, under-utilization and abandonment of agricultural land, tenure insecurity and conflict.

Several factors affect the way land in Kenya is used. In some parts of the country, high population densities, cultural practices of dividing land for inheritance, and the fact that most Kenyans live on their own plots in the rural areas, have resulted in highly fragmented and often uneconomical plots. In some of these areas, land scarcity and population pressure has led to conversion of marginal lands (such as floodplains and slopes) into farm land by the poor. In turn, this has led to increased vulnerability and aggravated environmental damage. Consequently, the affected agrarian groups are made economically worse off, barely able to

meet their subsistence needs. There are also some parts of the country with low population density, where certain cultural practices and other factors lead to idle or under-utilized land.

Large disparities exist with regard to ownership of land in the country, particularly in high potential regions where a few individuals own large tracts (most of which is idle), while a large number are squatters without any land of their own. In addition, glaring disparities exist with regard to gender, with few women claiming land ownership.

Land is often a major source of conflict in the country, as witnessed in 1992, 1997 and most recently after the December 2007 general elections. The underlying causes of these disputes included, but were not limited to, historical land allocation disputes, long-term land problems eventually leading to the squatter problem and economic disparities among different communities.

To address these challenges, the Government will develop and implement policy, legal and institutional reforms on security of land tenure, land use and development, and sustainable environmental conservation. A draft National Land Policy was initiated in 2004 with a view to addressing land administration and management problems. It will provide an overall framework and define the key measures required to address the critical issues of land administration, access to land, land use planning, restitution of historical injustices, environmental degradation, conflicts, unplanned proliferation of informal settlements, outdated legal framework, institutional framework and information management. Finalization of this policy and enactment of attendant legislations will be given priority.

After the adoption of the National Land Policy, a National Land Use Policy will be developed. The Land Use Policy will address the challenges of rapid urbanization, inadequate land use planning, unsustainable production, poor environmental management, inappropriate ecosystem protection and management. The desired transformation of land use for better and sustainable utilization and management shall be addressed under the following intervention:

(i) Creation of a consolidated Geographic Information System (GIS)-based land registry

(ii) Development and implementation of a land use master plan

(iii) Investment in institutions and infrastructure.

(iv) Settlement of landless poor.

6.2.1 Creation of a consolidated GIS-based land registry

Land adjudication has not been completed in most areas of the country. A backlog of adjudication cases and incompatible land Acts have made the adjudication process a never-ending process. Moreover, land documents are kept in land registries and over the years the land data has grown into unprecedented levels making manual system untenable. Although some 3.5 million land records have been digitally scanned, a computerized information management system is yet to be established. To speed up land transactions, increase land revenue and discourage corruption, a GIS-based Land Information Management System will be necessary. This will contribute to poverty reduction, good governance and improved security of tenure.

In addition, the system will enhance efficiency and effectiveness in the delivery of services for all Kenyans, especially the poor. Further, it will enable the capture, management and analysis of geographically referenced land-related data in order to produce land information for decision-making in land administration and management. Therefore, investments will be directed at revamping the recording system, revising the land maps and computerization of the land registries to reduce the amount of time taken in service delivery.

6.2.2 Development and implementation of a land use master plan

Land remains under-exploited for agricultural production. In the high and medium potential areas, only 31 percent of the land is under crop production, which represents a mere 5 percent of the total land in the country. Moreover, much of the available cropland remains under-utilized. For example, on average, smallholders use 60 percent of their cropland for agricultural production, suggesting that a substantial amount of high and medium potential land is currently idle. This intervention will facilitate the development and implementation of an agricultural land use master plan for more efficient utilization of all forms of land.

In the rural areas, land use practices are largely incongruent with the specific ecological zones. Uneconomic land sub-divisions, coupled with poor land use practices, are responsible for accelerated land degradation and declining land

productivity. In urban areas, proliferation of informal settlements, urban sprawl and encroachment into protected land remain key challenges. Meanwhile, the escalation of desertification as a result of land degradation and climate change pose risks to the lives of people living in ASAL communities.

6.2.3 Investment in institutions and infrastructure

The legislative framework to handle land-related cases is weak. This has contributed to a backlog of disputes in courts. In addition, land issues are governed by many laws, most of which are incompatible. This has led to complexities in land administration and management.

Currently, land adjudication and registration in the country covers only one-third (8 million ha) of the country. This situation has continued to prevent people from asserting their rights over land. To emphasize this point, to date, only 4.06 million title deeds have been registered countrywide. This is partly due to a slow adjudication process, inadequate resources for survey and mapping, conflicting land laws, a backlog of land disputes (some over 20 years old) and lack of civic education and awareness.

Progress in addressing these challenges is being made through the initiation of the development of a National Land Policy, which will principally provide an overarching framework for access to, planning and administration of land in the country. It will also address issues related to restitution of land due to historical injustices and the institutional framework. A Land Reform Transformation Unit has also been established in the Ministry of Lands to facilitate the implementation of the Land Reform programme as outlined in the National Land Policy.

6.2.4 Settlement of landless poor

The Government has been settling poor landless Kenyans through the Settlement Fund Trustee (SFT) programme. This programme has been facing challenges due to increase in population, which does not match the availability of agriculturally viable land. There is need to finalize all established settlement schemes and provide development loans for farmers to enable them develop their farms. This will enable the farmers pay the loans given under the programme.

6.3 Development of Northern Kenya and Other Arid Lands

The ASALs have not enjoyed the same level of development as the rest of the country. One consequence of this bias is that, while poverty is reducing in other parts of Kenya, it continues to rise in these regions. The region contains districts with the highest incidence of poverty in the country. Absolute poverty levels in northern Kenya were 65 percent in 1994 and 73 percent in 2000 and increasing further to 74 percent in 2005/06. Marsabit recorded 97 percent and Turkana 98 percent in 2000. In 2005/06, these poverty levels recorded insignificant drops to 92 percent and 95 percent respectively.

Human development indicators in the region are also well below the national average. In North Eastern Province, for example, the risk of infant death is reported to be over six times greater than in Central Province, while maternal mortality is nearly 2.5 times the national average. This regional disparity poses one of the biggest challenges to Kenya's chances of meeting the MDGs. Woodland rehabilitation and afforestation projects introducing high value commercial tree species and irrigation schemes are needed to support the communities.

The ASAL region faces unique multiple developmental challenges, which are inter-related and entrenched. Some of these have their roots in the legal discrimination, social exclusion and economic marginalization that resulted from colonial rule. In some respects these challenges were sustained by post-colonial administrations. For example, *Sessional Paper No. 10 of 1965 on African Socialism and its Application to Planning in Kenya* reinforced a pattern of public investment whereby resources were channelled to areas deemed to be of highest potential return and most responsive to change. This favoured the former White Highlands while perpetuating the marginalization of arid areas.

Other factors that contributed to underdevelopment of the region include: insecurity, including long-standing inter-communal tensions, competition over and commercialization of resources, the proliferation of small arms and the Government's limited presence on the ground and its weak enforcement of the law, the road network, which is rudimentary and in some places non-existent, telecommunications, which are restricted to major towns and along highways, limited access to electricity leading to restricted scope for investment, especially off-farm activities, irrigation development and pumping of water for livestock and other uses, poor infrastructure for livestock and crop marketing, failure to

match development ideas with budgetary allocation to the region, inadequate access to water to irrigation, domestic and livestock use, attitudinal and cultural impediments, poor delivery of agricultural services,high prevalence of trade-related livestock diseases, limited and poor education facilities that result in low literacy levels, underdevelopment of industrial capacity, and the impact of drought, which continues to be a major contributory factor to the rising poverty in these areas.

While the ASALs represent over 80 percent of the total land mass of the country, their enormous potential still remains largely untapped. There are 24 million ha of land that can be used for livestock production, but only 50 percent of the carrying capacity is currently being exploited. In addition, there are 9.2 million ha which have potential for crop production if irrigated. This irrigable land is equivalent to the total farmland in high and medium potential areas in the country.

The unique nature of the challenges facing the ASALs calls for a different approach to its development. In light of this, the Government will use three core strategies to develop the arid lands. First, it will drive or implement selected flagship projects and programmes that have been identified by the beneficiaries as having potential for creating impact in the region. Second, it will work on policy, legal, cultural or institutional issues which act as impediments to, or could facilitate, development in northern Kenya. And lastly, it will provide an effective institutional framework for coordinating development activities at all levels, within the Government and beyond.

While the ASALs are viewed to be mainly suitable for livestock production, the survival of the communities living in these areas will largely depend on their capability to manage the difficult environment and diversify into other opportunities, particularly those that support the population that is now increasingly becoming sedentary. This will also require change of attitude in all people involved in development of the region.

In order to realize the full potential of ASALs, the following interventions will be implemented:

(i) Formulation and implementation of appropriate policy and legal framework

(ii) Investment in targeted ASAL development programmes

(iii) Increasing area under cultivation

(iv) Diversification of income sources for pastoral communities

(v) Implementation of the Vision 2030 ASAL development flagship projects.

6.3.1 Development of policy and legal framework

One of the priority strategies to be adopted to facilitate rapid development of northern Kenya and other arid lands that have over the years suffered from underdevelopment is formulation of a policy framework that will specifically research and address the unique challenges facing the region. It is expected that this policy will address the legal, administrative, cultural and attitudinal impediments and provide the roadmap for development of the region. It is envisaged that if the policy framework will be successful, all regions in the country will be developing at acceptable rates.

In addition to the policy framework, the Government will implement an effective institutional framework to ensure a coordination mechanism to facilitate multi-sectoral development in the region.

6.3.2 Investment in targeted rangeland developments

In order to facilitate accelerated development of northern Kenya and other arid lands, a number of targeted interventions will be carried out. To start with, it will be important to open up the area for economic development through construction of roads and railway lines that will not only link northern Kenya to the south, but will also open up the region for trade with neighbouring countries such as Ethiopia, Sudan and Somalia. Besides ensuring access to input and output markets, this will encourage opening up the area for rapid investment thereby improving the standards of living for the residents.

Development of the area will further be expanded through increasing access to energy by exploitation of solar and wind energy sources. This will commence with first targeting electrification of all the new district headquarters and other urban centres in northern Kenya.

Access to water for domestic use, irrigation and livestock will be increased by harnessing water that is periodically available in the ASAL during the rainy

season. This will involve promoting water harvesting through construction of dams, pans and tapping of run-offs from roads and roof tops.

Emphasis will be laid on improving the access to local and export market. Therefore, strategically-located Disease Free Zones will be established to increase livestock productivity and quality. It will also require improvement of livestock marketing infrastructure, especially the stock routes, holding grounds, markets and watering points. The establishment of both public and private abattoirs in the arid districts will also be encouraged in order to provide easy access to market for livestock, especially during drought period. The Government will also strengthen capacity of the delivery of animal health services.

The Government will strengthen community-led natural resource management, including the utilization of cross-border grazing and browse resources through collaboration and harmonization of sanitary measures with neighbouring countries. Appropriate strategies will also be developed for environmental conservation in ASALs. Development and production of camels as well as other non-traditional livestock such as ostrich and other wildlife through game cropping and sanctuary operation will also be promoted.

6.3.3 Increasing area under cultivation

Increasing area under crops will aim at exploiting about 9.2 million ha of irrigation potential that currently lie largely unexploited in the ASALs. This will involve establishment of irrigation schemes in various parts of the region, more so the Tana and Athi basins, to increase agricultural production and reduce dependence on rain-fed production. The adverse effects on the environment and pastoral communities will also be reduced through implementation of appropriate strategies.

Other than irrigation, rain-fed production will be encouraged for emerging high value drought tolerant crops such as jatropha, melia, indigenous fruits, medicinal species, gum arabic and resins. In addition, research in and adoption of drought tolerant crop varieties such as cotton, sisal, sorghum, millet and pigeon peas will be promoted.

6.3.4 Diversification of sources of income for pastoral communities

In order to reduce the impact of poverty on the ASAL communities, diversification of income and employment sources will be promoted. This will include enhancing livestock value addition projects such as meat, milk, honey, hides, skins, and bone processing as well as soap making and oil making. Commercial tree planting will be encouraged to provide income, medicines, fodder, foliage, bio-fuels, fruits, juices and jams, as well as dyes, silk and spices.

Establishment of wildlife conservancies and game farming will be prioritized as a land use under local community management. Off-farm activities will also be promoted. These include investment in the ICT, business outsourcing, trade, informal cottage industry, mining and transportation. This calls for exploitation of existing potential for solar and wind energy.

6.3.5 Implementation of the ASAL development flagship projects

The Vision 2030 ASAL development flagship projects, which fall under the agricultural sector grouping, will be implemented in an integrated manner and will, among others, include the following: exploitation of the 9.2 million ha irrigation potential, development of water resources for livestock, domestic and irrigation use, construction of targeted roads, management of natural resources, facilitating sustainable exploitation of renewable sources of energy to support agricultural development, exploring the possibility of providing a livestock insurance scheme for producers in arid areas, and improving technical capacity of arid lands residents.

6.4 Improvement of Environment and Natural Resource Management

Kenya has seen rapid economic development. However, coupled with rapid population growth, has exerted cumulative pressure on the environment and natural resources. Increased industrial activities and trade have led to a waste and pollution management problem. The importance of sustainability of the environment and natural resources cannot therefore be underestimated in the country's economic development plan.

Emphasis on natural resource management has been supported by the various documents. The sub-sector is crucial in the achievement of sustainable development in the country and particularly the achievement of MDG 7 (ensuring environmental sustainability).

Water catchments are being encroached and converted into agricultural land. This has led to reduced river water levels, drying up of seasonal rivers and more so destruction of fragile ecosystems. Wetlands which are vital for carbon sequestration, are lost every day to agricultural production. The effect of the invasive species, such as water hyacinth in the water bodies, can also not be underestimated. On the same note, climate fluctuations have a bearing on the way the environment and natural resources are managed. The effect has led to the unpredictability of weather, which in turn affects agricultural activities.

The above challenges, combined with low capacities and awareness, have led to unprecedented destruction of the environment particularly in the extraction of land-based resources, and insufficient enforcement of the regulations.

To address these challenges, the environment sub-sector will implement the following intervention strategies:

(i) Improvement of environmental conservation

(ii) Improvement on pollution and waste management

(iii) Enhancing resource conservation and management

(iv) Management of mineral resources.

6.4.1 Improvement of environmental conservation

Unsustainable natural resource use leads to environmental degradation. Indices of degradation include floods, landslides, droughts and desertification. The effects of environmental disasters and their impacts are both cumulative and long term. Statistics show that floods in Kenya will increase in intensity and in spatial and temporal scales. On the other hand, the effects of prolonged drought conditions (*La Nina*) have equally disastrous effects that lead to loss of human life, crops and livestock. Within the last decade, the country experienced invasive species in most of her water bodies and terrestrial areas. These include the water hyacinth

and salvinia weed. In addition, land-based invasive weeds such as prosopis have been noted in most ASAL districts. On these biological disasters, pest invasion has been cyclic in most ecosystems. The most notable is the aphids and armyworms, which destroy agricultural products resulting in famine.

6.4.2 Improvement on pollution and waste management

Pollution and waste is one of the leading environmental health problems in the country, affecting both rural and urban populations. Air pollution results mainly from industries. Although the quality of air in Kenya is not regularly monitored, it is estimated that it is below the WHO recommended levels. For example the PM_{10} pollution level in Nairobi is estimated at 42μg/m^3 attributed mainly to high concentration of industries and vehicles in the city. Air pollution is responsible for increasing cases of Upper Respiratory Tract Infections (URTI), which is the second highest cause of morbidity in Kenya. Thus, the incidence of URTI morbidity is higher in urban areas compared with rural areas and affects women more than men. Urban forestry developments along highways and recreational parks are important in fixation of carbon emitted from industrial processes and motor vehicles.

Waste management is another environmental risk affecting the country, especially the urban population. Although the responsibility of waste management is vested in local authorities, most of them lack the necessary capacity to deal with the amount of waste that is generated. For example, Nairobi City produces 1,000 tons of solid wastes per day and only 20 percent of it is collected and taken to approved dumpsites. In rural areas, 50 percent of households dispose domestic waste in farms. With the increasing per capita waste generation in the country, the risks of waste on human health seem real and call for the design of appropriate waste management systems, especially in urban centres, to cater for the rapidly urbanizing population.

Misuse of chemicals have now become a world concern because of negative environmental and health impacts leading to global control programmes on chemical and wastes. Kenya is signatory to various international conventions on Persistent Organic Pollutants and will, therefore, remain committed to their implementation.

The effects of climate change pose risks for the stability and survival of ecosystems, especially when combined with other natural and human environment. As the earth's surface continues to warm, it is becoming unstable and less predictable. The frequent flush floods, droughts and erratic rainfall in the country may be attributed to changes in the climate. The damage caused by Ultra-Violet (UV-B) radiation to the environment and human and plant health directly impacts on the economy of the country. First, crop yields will be decreased culminating in increased poverty for a country whose already fragile economy is based on agriculture. Secondly, impairment of body immune system will exacerbate death from diseases such as malaria and HIV/AIDS. In addition, increase in skin cancer and eye cataracts will constitute increased medical costs.

6.4.3 Enhancing resource conservation and management

Kenya is a mega-biodiversity state with its biodiversity hoisted in its various habitats and ecosystems that include, among others, forests, grasslands, wetlands, coral reefs and mangroves. Most of the country's biodiversity is also found within protected areas, which comprise these habitats and ecosystems.

In Kenya, protected areas are estimated to cover 7,194 ha, or 12.3 percent, of the total land area of 58,037,000 ha. This estimate excludes marine and littoral protected areas, which are estimated to cover 355 ha. The percentage of protected area on land is considered to exceed the ideal of 12 percent per country in global terms. However, species loss continues and management of the protected areas remains a significant challenge.

The country is home to over 6,500 plant species, more than 260 of which are found nowhere else in the world. With more than 1,000 bird species and over 350 species of mammals, Kenya ranks second highest among African countries in species richness for these animal groups. Over time, the country has lost some of her well-known biodiversity resources mainly due to population increase, habitat destruction, desertification, over-exploitation of species and conversion through deforestation and drainage of wetlands for agriculture and settlement. This problem is compounded by limited functional mechanisms for monitoring and regulating the introduction into the country of alien invasive species.

Currently, there is no comprehensive policy on biotechnology and legislative framework to regulate access and exploitation of genetic resources. While collection of genetic materials for industrial purposes is going on, there is no mechanism for monitoring such activities. With increasing demands for genetic materials for use in biotechnology by the developed countries, illegal collection of genetic materials has increased. This denies the country revenue from sale of such materials and also her potential to develop its own biotechnology capacity and related industrial potential.

Wetlands in the country are home to variety of biodiversity and are diverse in type and distribution and cover 2-3 percent of the country's surface area. Some of Kenya's wetlands, such as Lake Naivasha and Lake Nakuru, have been included in the Ramsar list of Wetlands of International Importance. The country also has 400 km coastline that is rich in marine resources and mangrove ecosystems that comprise the main coastal wetlands. With a comprehensive national inventory on wetlands, the preparation of a Wetlands Development Policy will address wetlands conservation and sustainable utilization.

6.4.4 Management of mineral resources

Mining contributes 3 percent of Kenya's total export earnings annually. Minerals currently contribute about 1 percent of GDP per annum, which is projected to increase to1.5 percent in the plan period.

However, mining activity contributes to land degradation and pollution through the disposal of the mining waste onto the earth's surface, water bodies and into the atmosphere. Open cast mining such as quarrying for ballast in the eastern suburb of Nairobi is destructive through the various sizes of pits and heaps of waste that is produced. These quarries when filled with water become drowning zones as well as breeding zones for pests that spread waterborne diseases, while un-rehabilitated quarries form wastelands. Also, the use of mercury to form amalgam during the processing of gold around Lake Victoria is gradually leading to mercury pollution of the various rivers flowing into the lake as is evidenced by the accumulation of the mineral in the fish tissue.

6.5 Development of River Basins and Large Water Body Resources

Since independence, the Government has adopted various development policies as articulated in various sessional papers, special policy reports and commissions, all intended to reverse the effects of unbalanced regional development. In spite of its efforts to realize equitable and balanced development through implementation of various macroeconomic as well as sectoral policies, economic and social disparities still persist among regions. These disparities are evident between regions, but also more subtly within regions. Persistence of these disparities, if not addressed, may impede the attainment of the Government's development agenda for productivity and equitable growth, social justice and environmental sustainability as envisioned in Vision 2030.

The most common spatial inequalities in regional development in Kenya include the following: inter-regional inequalities, intra-regional inequalities, urban-rural inequalities,inter and intra urban inequalities, and inter and intra rural inequalities. To address these inequalities, the Government established six Regional Development Authorities (RDAs), based on river basins and large water bodies. These are Tana and Athi Rivers Development Authority (TARDA), Kerio Valley Development Authority (KVDA), Lake Basin Development Authority (LBDA), Ewaso Ng'iro North Development Authority (ENNDA), Ewaso Ng'iro South Development Authority (ENSDA) and Coast Development Authority (CDA). These RDAs act as vehicles to implement integrated multi-sectoral programmes and projects in their areas of jurisdiction and ensure equitable and sustainable exploitation of resources for the benefit of the communities and the country at large.

The regional development sub-sector is faced with several challenges in its endeavour to fulfil its goals. These challenges include the following: weak institutional policy and legal framework, lack of comprehensive resource mapping and resource databanks, limited documentation of the levels of development in the regions, river bank cultivation and resultant soil erosion, catchments areas degradation,weak mechanism for ensuring equitable compensation and benefit sharing for the local communities arising from the economic exploitation of resources in the regions, and low levels of development in various regions resulting in high incidence of poverty.

In order to address these challenges, the Government will implement the regional development policy, rationalization and restructure the RDAs and consolidate the Regional Development Acts. Greater emphasis will be put into development of resource master plans and implementation of integrated development programmes that create social and economic impact in the regions and the country at large. More specifically, the following intervention strategies will be implemented:

(i) Implementation of policy and institutional reforms to strengthen regional development planning

(ii) Development and conservation of river banks, water bodies and catchments areas

(iii) Development of community support and empowerment programmes

(iv) Formulation and implementation of integrated basin-based development programmes.

6.5.1 Policy and institutional reforms

Despite the establishment of RDAs in the 1970s, Kenya has not had a clearly defined Regional Development Policy to guide their operations. As a result, they have continued to draw their operational mandates from their respective Acts of Parliament. However, the functions and mandates prescribed in these Acts are too broad and in some cases create jurisdictional conflicts. The Government has put in place an institutional framework to provide policy guidance and capacity building for the RDAs. In addition a regional development policy has been formulated to provide an overarching framework to facilitate regional development in the country.

However, some aspects of the policy will be reviewed in order to accommodate new challenges in the sub-sector. Respective RDAs have continued to interpret their mandates exclusively without reference to their counterparts making them pursue different activities from similar functions. In order to address this, the different RDA Acts will be reviewed and consolidated into one Act to enable them execute their mandate more effectively. Institutional reforms to rationalize

and restructure them will be undertaken to improve their capacity in the delivery of effective and quality services to Kenyans.

Information and database to support regional development is weak. This has contributed to lack of comprehensive planning by stakeholders in the regions. Therefore, supporting information and records management in the sub-sector will go a long way in providing the necessary data to back development planning and provide investment opportunities.

Development of comprehensive resource maps, integrated master plans and databanks for each region on these resources will provide invaluable information for all stakeholders in the sector. The levels of development in the regions are currently not well documented by the sub-sector. Lack or limited information in this area has made the sub-sector and other stakeholders unable to set development priorities based on the investments already on the ground. Therefore, to address this the sub-sector will carry out monitoring and documentation of the levels of development and disseminate the information to the relevant stakeholders.

6.5.2 Conservation of river banks, water bodies and catchments

As noted earlier, Kenya is a water scarce country with renewable fresh water per capita currently standing at 647 m^3 and is expected to fall to 235 m^3 by 2025 if supply does not keep up with population increase. This situation is attributed to various factors among them the destruction of catchment areas through forest destruction, river bank cultivation and poor land use. These have resulted in increased run-off, flash floods, reduced infiltration, soil erosion and siltation of dams and other water reservoirs. Further, effects of unsustainable human and industrial activities along large water bodies, mainly pollution, contribute to the decline in the quality of the environment.

To protect the environment, the regional development sub-sector will carry out feasibility studies with regard to protection and conservation of the environment and formulate and implement programmes/projects that promote protection and conservation of riverbanks, water bodies and catchments areas in collaboration with communities and stakeholders.

6.5.3 Community empowerment

The majority of vulnerable groups, women and youth are mainly found in Kenya's rural and slum areas. These groups are mainly faced with lack of employment, lack of capital and, in some cases, lack of skills. High poverty level is a major challenge among these groups. The Government's goal in this area is to achieve social equity and poverty reduction through reduced income disparities. Vision 2030 aims at reducing inequality in the access to public services and income opportunities across gender, social status and regions. This will be achieved through reduction of the national poverty ratio from the current 46 percent to a range of between 30 and 35 percent by 2012.

To contribute to the reduction of poverty and increase income generation in the region, the sub-sector will promote integrated community programmes that support empowerment ventures and reduce poverty in rural areas. To achieve this, collaboration and linkages with other stakeholders will be forged as well as partnership in utilization of devolved funds in the rural areas.

6.5.4 Integrated river basin development

The river basins are endowed with various natural resources of huge potential for exploitation. Most of the rivers forming the major basins include Tana, Athi, Ewaso Ng'iro, Mara, Nyando, Sondu, Nzoia, Yala, Kuja, Kerio, Arror, Mwache and Sabaki. The large water bodies include Indian Ocean, Lake Victoria, Lake Challa and Lake Turkana. There are also extensive rangelands that are home to various livestock and wildlife.

These rivers and water bodies are perennial and the water can be utilized for hydropower production, irrigation, domestic and industrial use, livestock and fisheries, mining, marine activities and tourism amongst others. Rangelands have potential for pastoralism, tourism, mining and wind power generation, which can be used for extraction of water for irrigation as well as power supply for both industrial and domestic use in the remote areas. These resources are partially exploited or unexploited.

Demand for more human food and animal feed, energy source for industrial and domestic use, water supply and protection of the environment in the river

basins and the country at large require a concerted effort to provide more food, electricity, potable water and a clean and conserved environment. To address these challenges, the regional development sub-sector will formulate and implement integrated multipurpose programmes and projects that will increase hydro-power generation, area under irrigation, storage water supply capacity and area under catchments conservation. The integrated development will include flagship projects along major rivers such as Tana. Most of the programmes/projects under this strategy will be implemented under, among others, PPP arrangement.

6.6 Forest and Wildlife Resources

Kenya has some severely degraded areas with about 70 percent of the population living in the 12 percent of total land area that is classified as being of medium to high potential for agriculture and livestock production. The growing population and the resulting increase in demand for land, energy and water is putting tremendous pressure on the natural resource base.

Natural resources play two basic roles in development; firstly, that of supporting subsistence, and secondly, as a source of development finance. Commercial management of natural resources can provide important sources of profit and foreign exchange. A major focus and priority in utilization and development of the natural resources is to ensure sustainability of the resources and stability of the supporting resource base improvement. The potential of biodiversity within the forestry and wildlife sub-sectors should be harnessed and sustainably utilized.

Forest ecosystems are reservoirs of biodiversity, comprising four categories – state indigenous forests, state plantation forests, farm forests, and forest and woodlands on local authority land including dry land forests. Forests provide a wide range of economic, environmental and social goods and services such as raw materials for the wood-based industries, employment, soil stabilization, carbon sinks and water catchments that protect the rate of flow and quality of water discharged by the rivers draining these catchments.

The indigenous forests have endemic and threatened species. Dry land forests and farm trees provide important livelihood strategies for many of Kenya's poor people that include wood fuel, charcoal burning for income and use of wood products for building. In Kenya, it is estimated that forests provide wood and

non-wood products to over 80 percent of all households. They play a key role in supporting other productive sectors including agriculture, industrial energy and, significantly, enhancing the environment's ability to withstand disasters such as floods, landslides and drought.

The wealth of indigenous knowledge on different uses of plants and animal materials, particularly those with medicinal value is recognized. This knowledge has been used to identify plants and animals with potential to provide ingredients that can be developed into commercial products for their own benefit without any commensurate benefit to the community. Kenya has over time lost some of her well-known biodiversity resources mainly due to population increase, habitat destruction, desertification, over exploitation of species and conversion through deforestation, and drainage of wetlands for agriculture and settlement. This problem is exacerbated by limited functional mechanisms for monitoring and regulating the introduction into the country of alien invasive species.

While most of the wildlife is concentrated in game parks and reserves, there is considerable population of wild animals in farmlands and ranches. The animals in the game parks and reserves have been well-managed and play a key role in the national economy mainly through tourism. However, the game in the farmland and ranches is seen as a menace, posing potential conflict between wildlife and the human population. There is significant potential in exploiting these resources through game ranches and conservatoires and rearing some special wild animals such as ostriches and crocodiles.

As noted earlier, land is one of the most important resources in Kenya. It is the base upon which activities like agriculture, wildlife conservation, urban development, human settlement and infrastructure are carried out. There have been remarkable land use changes over the years, particularly agriculture and rural and urban development. These changes have negatively affected wildlife across the landscape. Furthermore, local authorities that hold parcels of land in trust for the residents have abused the trusteeship through illegal allocation and change of user, which has led to a negative impact on wildlife conservation and management in such areas.

Wildlife habitats provide an important resource base for rural people's livelihoods. However, rapidly increasing populations and other complex socio-economic

factors have put enormous pressure on the limited productive land forcing the rural poor to resort to inappropriate land use. Poor cultivation methods, deforestation, charcoal burning and overgrazing are four main factors that cause severe wildlife habitat degradation.

In addition to these factors, insecurity in most of the wildlife areas presents a serious threat and challenge to wildlife conservation and management efforts. The security relates to the protection of wildlife, communities living in those areas and visitors. This situation has been exacerbated by the state of insecurity in the neighbouring countries, which has led to the proliferation of small arms in the region. These arms are used in poaching.

Wildlife resources are found both within and outside protected areas. Whereas protected areas have been set aside for purposes of wildlife conservation, the areas outside, which serve as dispersal areas, are communally or individually owned. Currently, there are inadequate incentives to motivate communities and land owners to adopt land use practices that are compatible with wildlife conservation and management.

In addition to this, most of wildlife protected areas were established without due regard to the surrounding landscapes. Consequently, boundaries between protected areas and the wider landscapes and communities are becoming distinct through the erection of fences and other barriers. In terms of wildlife management, the rigid boundaries between protected areas and the surrounding landscapes have compromised integrated and effective management of many ecosystems.

Conservation and management of wildlife outside protected areas has not been integrated into the broader protected area management and there are limited partnerships between the adjacent communities and park management authorities. In addition, most protected areas are too small to encompass ecosystem processes on which wildlife populations depend. Therefore, increase in wildlife populations can result in pressures that degrade the park ecosystems. Limited park size and confined wildlife populations are inimical to the survival of species at the edges of the protected areas, especially where the land use in the adjacent areas is incompatible with conservation.

The forest and wildlife sub-sector is mandated to protect, conserve and sustainably manage the forestry, wildlife and other allied resources in the country. This

sustainable development agenda is linked to the improvement of the economic and social conditions of Kenyans. This will lead to the attainment of the objective of achieving equity in wealth distribution, ecological sustainability and economic growth. Therefore, the sub-sector is expected to play a major role in meeting this national and global objective. In order to ensure effective protection, conservation and sustainable management of forestry and wildlife resources, the following interventions will be implemented:

(i) Formulation and implementation of appropriate forestry and wildlife institutional, policy and legal frameworks

(ii) Development and implementation of appropriate mechanisms for protection, conservation and sustainable management of forest resources

(iii) Development and implementation of appropriate mechanisms for protection, conservation and sustainable management wildlife resources

(iv) Strengthening forest and wildlife research, extension and training

(v) Implementation of forest and wildlife flagship projects.

6.6.1 Development of institutional, policy and legal frameworks

Forestry and wildlife plays a key role in advancing the national economic and social agenda on economic recovery and poverty reduction. However, the benefits have not been fully realized mainly due to weak policy, legal and institutional frameworks.

To streamline this, the forest and wildlife sub-sector will institute appropriate reforms with the objective of enhancing the management of forestry and wildlife resources for sustainable development. In addition, the sub-sector will articulate and implement the country's commitment to global and regional forestry and wildlife conventions including Agenda 21 on sustainable development, the MDGs, United Nations Convention on Combating Desertification, United Nations Framework Convention for Climate Change, the RAMSAR Convention on Wetlands and the NEPAD initiative.

6.6.2 Protection, conservation and management of forest resources

Forests play vital roles in protection of water catchments areas and conservation of biodiversity and in the provision of forest products in the country. However, there has been accelerated destruction of forests due to increasing population. Kenya is now internationally considered as a low forest cover country. The remaining natural forests have also been degraded and the forests on the five water towers can no longer provide sustainable supply of water, raw materials and other services required to meet the goal of Vision 2030. Furthermore, trees on farmlands and in industrial plantations have also been over-harvested leading to a widening gap between the supply and demand of forest products. Low level public investments as well as clearing of woodlands in dry areas for agriculture and charcoal production are also major causes of environmental degradation.

In order to arrest this situation, appropriate interventions for protection, conservation and sustainable management of forest resources will be developed and implemented.

6.6.3 Protection, conservation and management of wildlife resources

The Kenya Wildlife Service (KWS) is responsible for wildlife conservation and management. It also has the sole jurisdiction over national parks and an oversight role in the management of national reserves and private sanctuaries. Additionally, it has the legal mandate to enforce wildlife laws and regulations.

Kenya's wildlife biodiversity provides the base for the tourism industry. Most of the wildlife is found in only 8 percent of the land area that is gazetted for wildlife conservation. The main concern in wildlife management is the encroachment of protected areas for agriculture and infrastructural development as well as rapid decline in their population, both in and out of the protected areas. Since 1977, the country has lost 60-70 percent of its large wildlife with the annual decline currently estimated at 3 percent; some species like rhinos, the Hirola antelopes and the dugongs are endangered.

In order to address this situation, appropriate interventions for protection, conservation and sustainable management of wildlife resources will be developed and implemented.

6.6.4 Strengthening of forest and wildlife research, extension and training

The overall objective for this intervention strategy is to create an integrated forest and wildlife research, extension and training system that will facilitate the development of an innovative, commercially-oriented forest and wildlife sub-sector. This will be achieved through establishment of an appropriate institutional arrangement and mechanisms for efficient mobilization and management of human, physical, financial, knowledge and information resources, and orientation of research, extension and training to be responsive to the sub-sector development goals, market demand, client needs and cross-cutting and emerging issues.

The coordination of research, extension and training institutions will be enhanced through better regulation, monitoring and evaluation. There will be increased levels of interaction between the forest and wildlife sub-sector, the private sector, academic and research institutions and key stakeholders. This interaction will ensure that resources are better allocated to reduce duplication of research, dissemination and training activities. Greater collaboration among the key stakeholders will be promoted to strengthen the linkage between research policy and the application of research findings.

6.6.5 Forest and wildlife flagship projects

The Vision 2030 flagship projects relevant to the forest and wildlife sub-sector include the following:

(i) *Water catchments management*: This flagship project entails full rehabilitation of the five water towers of Mau Escarpment, Mt Kenya, Aberdare Ranges, Cherangani Hills and Mt Elgon.

(ii) *Securing wildlife corridors and migratory routes*: Most wildlife corridors have been interfered with by human activities. The purpose of this flagship project is to reclaim these wildlife corridors so as to enable the wildlife to continue providing the base for the tourism sector.

7 ENABLING FACTORS

The performance of the agricultural sector depends on several factors that are closely linked, but are external to the sector. These include macroeconomic stability, taxation policies, education and training system and security.

7.1 Macroeconomic Stability

An important role of the Government is to ensure that macroeconomic stability is achieved and maintained. In Kenya, the foundation was firmly in place after the implementation of various reforms under the Economic Recovery Strategy, which was concluded in 2007. Vision 2030 will build on the successes under ERS with a macroeconomic framework of low and stable inflation and interest rates, a sustainable public sector debt position, and a competitive real exchange rate to support export-led economic growth. This framework will help to deliver high and sustainable levels of growth, employment and poverty reduction.

Vision 2030 requires the rate of growth of the economy to rise from 6.1 percent achieved in 2006 to 10 percent by 2012/13. Achieving these growth targets will require the following: continued implementation of prudent fiscal, monetary and exchange rate policies; enhanced effort to raise the level of investments and savings; and accelerated structural reforms in order to increase the efficiency of both physical and human capital and raise total factor productivity.

7.2 Taxation system

While farmers in many countries are subsidized as much as 100 percent, Kenyan farmers face numerous direct and indirect taxes, which make agriculture less competitive internationally. There are a wide range of taxes, levies, cesses and fees charged by the central Government and the LAs on farm produce and forestry, and on farm inputs and services used by the sector. The impact of these taxes, levies, cesses and fees distort market prices thus making farm produce uncompetitive in

the domestic as well as in international markets. In addition, the multiplicity of agricultural taxes makes it difficult to efficiently administer them.

Some taxes such as the local Government's cess, create artificial barriers to the movement of goods and ceate a fertile ground for corruption. In order to remove these fiscal disincentives and encourage private investment in agriculture, forestry and wildlife, the Government will review all taxation laws and regulations to rationalize taxes, cesses, fees and levies charged on agriculture by LAs and the central Government. This will ensure that such charges are undertaken only where a service is being provided.

7.3 Governance

The Government has taken bold measures to combat corruption, promote good governance and instil a sense of financial discipline and prudent management of the economy. As a result, Kenya's relations with her development partners has improved dramatically in recent years. This has resulted in a major increase in inflows of external assistance, which has a positive impact on the inflow of foreign investment and the delivery of services by the Government.

Steps will be taken to consolidate and strengthen the renewed working relations with our development partners. Improved sectoral and donor coordination, together with a sector-wide monitoring and evaluation framework are some of the elements of sustaining and strengthening relations with external partners. These will be formalized by periodic meetings between the Government of Kenya and the development partners.

7.4 Education, Training, Science and Technology

The Kenya Government recognizes that the education and training of all its citizens is fundamental to the success of the strategy. The Vision is based on the creative talents capable of raising the country's international competitiveness through enhanced productivity at the micro (agribusiness) and national levels. A literate population is an asset to the agricultural sector by providing qualified personnel and opportunities for developing and disseminating Science and Technology and Innovation (STI)- based solutions to the agricultural sector. It

will also help the country to address gender imbalances, youth-related problems and obstacles facing other vulnerable groups by equipping them with the skills that enable them to live more productive and satisfying lives in an expanding and diverse economy.

In view of this, the Government will ensure affordable and equitable access to education through development and operationalization of an education policy that addresses basic and functional literacy.

A knowledge economy creates, adopts and adapts information on production and distribution of goods and services, making it the focal point and engine of rapid agricultural growth. There are four elements that allow effective exploitation of knowledge:

(i) An economic and institutional regime that provides incentives for the efficient use of the existing knowledge, the creation of new knowledge and the flourishing of entrepreneurship;

(ii) An educated and skilled population that can create share and use knowledge well;

(iii) A dynamic information and communication infrastructure that can facilitate processing, communication, dissemination; and finally,

(iv) An effective innovation system comprising a network of research centres, universities, think tanks, private enterprises and community groups that can tap into the growing stock of global knowledge, assimilate and adapt it to local needs, while creating new knowledge and technologies as appropriate.

Kenya intends to become a knowledge-led economy in which the creation, adaptation and use of knowledge will be among the most critical factors for rapid economic growth. In view of this, efforts will be made to promote awareness of new ideas and discoveries to the general public. This will create and deepen STI awareness, particularly in the social sphere. It will also support initiatives to develop STI solutions to address current and future development problems as well as transformation of proven technical and indigenous knowledge into technologies and protect them as intellectual property rights.

Measures will be put in place to identify and protect national agricultural heritage. In order to encourage innovation and scientific endeavours, a system of national recognition will be established to honour innovators in agriculture.

7.5 Infrastructure

Investment in rural railway, roads, water supply, transportation, storage, cattle dips, rural markets, electrification, communications, water management schemes, stockholding grounds, stock auction markets, stock routes and abattoirs is critical for stimulating increased agricultural, livestock and fish production. Not only is the stock of rural infrastructure in poor condition and inadequate for the development of the rural economy, but is also unevenly distributed leaving some high agricultural potential areas with little or no coverage.

Some rural infrastructure falls directly within the agricultural sector, but has been handed over to user associations. The main infrastructure such as railway, rural roads, communication and electrification is outside the agricultural and rural sector. The development of this infrastructure under the relevant ministries will take account of the needs of agricultural development by involving the agricultural sector in their master plans and development plans at national and district levels.

Energy is one of the infrastructural enablers for agricultural growth. The level and intensity of commercial energy use in the agricultural sector is a key indicator of the degree of economic growth and development. In order to improve on energy supply, the agricultural sector ministries, in collaboration with the Rural Electrification Authority, will develop a comprehensive rural electrification master plan to enhance agro-industry.

Programmes aimed at promoting alternative sources of energy such as solar, wind, biogas, geothermal, woodlots and hydropower will be encouraged. The private sector will also be encouraged to venture into power generation initiatives. Emerging sources of energy such as bio-fuels will be promoted through significant investment in research and careful planning in line with the National Strategy guiding production of bio-fuels. For northern Kenya and other arid lands, emphasis will be laid on exploitation of solar and wind energy, with individual

and isolated production points being used to reduce the cost of connecting a grid to the dispersed settlements.

7.6 Human and Social Development

7.6.1 Human health and labour

Human health is important in the agricultural sector, as it affects the labour force involved in agricultural activities. The most devastating impact of human health on agriculture is epidemics and pandemics such as malaria, HIV/AIDS and zoonoses. Given its profound social and economic implications, HIV/AIDS pandemic is a major concern of the Kenya Government.

AIDS has neither a vaccine nor affordable and effective treatment. It has far-reaching adverse effects on agricultural development. It consumes household savings as a result of high health care costs leading to a decline in asset base. It also causes labour shortage and break-up of social bonds. Further, there is loss of farm management resources and skills because adults die before passing on their knowledge.

Labour shortages and increasing dependency among households headed by survivors – notably widows, orphans and elderly people – lead families to resort to less labour-intensive crops that are of poor nutritional status such as cassava. Moreover, the death of productive adults who are key family providers is shattering social networks that provide households with community help and support, leading to social exclusion of survivors.

The active age group of between 15 and 39 years, constituting about 70 percent of the population, is most vulnerable to the pandemic. Within this group, women and girls, who constitute about 60 percent to 80 percent of the household labour force, are more vulnerable to HIV/AIDS due to biological and social factors. The situation for women is aggravated by the added burden placed on them by traditional responsibilities of caring for the sick. In view of this, strategies will be developed and operationalized aimed at mainstreaming gender issues in an effort to control the spread of the pandemic and mitigate its effects on agricultural development.

Malaria and waterborne diseases also pose a serious threat to the human population and hence to agricultural labour. Priority will be given to the early

control of diseases that hinder continued growth of the rural sector because they affect the most active and economically able sections of the population. This takes away vital labour and market groups for agriculture and limits livestock production. The development of community-level measures and actions to control tsetse flies, mosquitoes and waterborne diseases and the promotion of community or household level water purification systems will be undertaken.

7.6.2 Gender

In principle, existing laws provide for equal rights and privileges for both men and women. However, their interpretation through common laws and social conventions often leads to difficulties and the equality enshrined in the laws is compromised. Women contribute 60 to 80 percent of labour in households and reproductive activities and in agricultural production. Generally, women work longer hours than men. This contributes to their poorer health and nutritional status and high maternal mortality.

Ironically, men, who are traditionally considered heads of households, have greater access to land, credit and extension services. In schools, girl dropouts make them proportionally less educated than boys.

Based on these observations, it is clear that traditional interventions in agricultural development are likely to affect men and women differently. An effective gender approach in designing and implementing interventions in agriculture would take these differences into consideration, focusing on equality and equity of the outcomes rather than just equal treatment.

The Government will develop a gender policy for the agricultural sector to ensure women's empowerment and mainstreaming of needs and concerns of women, men, girls and boys in all sectors of development so that they can participate and benefit equally from development initiatives. This will also promote the use of gender analysis and gender-based budgeting in all community-based development programmes through appropriate participatory approaches.

Developing a gender policy is a crosscutting issue. Consequently, coordination and collaboration with other sectors is necessary. Within the agricultural

sector, gender issues will be incorporated in all the proposed interventions at the community level through participatory approaches. It is intended that gender integration in all activities of ASDS will significantly increase efficiency, sustainability, empowerment and equity at all levels.

7.6.3 Empowering youth

The agricultural sector's human resource base is being eroded not only by the HIV/AIDS pandemic and malaria, but also by the continuous migration of youth from rural to urban areas. This migration is caused by a number of factors such as the drudgery of agricultural work under current agricultural practices and the lack of attractive alternative employment in rural areas. The Government will review and produce an appropriate Youth Development Policy in which measures will be outlined to reduce youth migration in order to sustain agricultural human resource requirement and empower the youth.

Being dynamic and energetic, the youth are impatient and need quick and tangible results to be attracted to any business. If agriculture is made commercially viable and treated as a business, they would get into it. However, in order to attract the youth into agriculture, there is need for attitude change among the rural communities to perceive it as a business and make it commercially viable.

In this regard, efforts will be made to sensitize the youth on lucrative ventures in the agricultural sector and to establish processing plants for value addition in the rural areas for which they would produce agricultural raw materials besides acquiring the necessary employment opportunities. Linkages between the Ministry of Youth and Sports and the agricultural sector will be established to offer incentives for youth in farming either through the Youth Enterprise Development Fund, Constituency Development Fund or the Innovation Fund for Agriculture and Agribusiness.

This is expected to provide the necessary means as well as motivation for the youth to engage in farming. Measures will be taken to make rural areas more attractive to the youth by offering facilities like ICT and resource centres to stem rural-urban migration.

7.6.4 National security

Security is critical for investment in agriculture. It ensures a society that is free from danger and fear.

Measures to promote public security and minimize conflict, especially in the rural areas, will be given priority through review and enactment of laws to deal with modern crimes and allow community-based security systems and development of a framework for border and territorial policing and collaborative security management. In the arid lands where insecurity is a major challenge, the Government will develop a strategy to end inter-communal conflict. This will be expected to harmonize and take into a deeper level the efforts of all actors in peace building and conflict management.

7.6.5 Participatory planning

Much of the current planning is as a result of years of centralized planning, which has been supported by the current systems for accessing external support, mainly through the Government ministries. The top-down system is supported too by human resources and other institutional arrangements.

Participatory and planning tools and skills are not widely used at the local level except by NGOs, posing the risks of poor support at the local level. To avoid such a situation, modalities for institutionalizing joint planning between the agricultural sector and supporting sectors at the local level will be supported. Locally developed work plans will be the basis for resource allocation.

The first step in revitalizing rural development will be to strengthen the decentralization of decision-making and devolvement of the management process to the district level. The Local Authorities (LAs) will be appropriately strengthened through a review of the relevant local authority legal and fiscal instruments to play this role. The District Focus for Rural Development and Constituency Development Fund (CDF) provides entry points, but would have to be modified and strengthened to serve this purpose. The national subventions would be supplemented with resources raised locally (such as fees, cess and taxes), and through NGOs and stakeholder contributions. This is already being practised by some NGOs, CBOs, FBOs and community based initiatives (CBIs),

which are operating at this level. The change will bring about devolution and de-concentration of power and responsibility for decision-making, planning and implementation management to grassroots levels, and participation and empowerment of the local communities and their institutions.

The implementation of any programme will be in accordance with the priorities set by the stakeholders at the lower level. Experience has shown that beneficiaries will normally identify priorities that are interrelated and that require multi-sectoral interventions to solve. On this basis, the District Plans will be prepared jointly by the stakeholders and LAs and submitted for financing by the Government.

As mentioned above, an innovative feature of the strategy is its implementation through LAs and District Development Committees (DDCs) where District Development Plans are formulated; DADPs will be a component of District Development Plans. Therefore, of necessity, agricultural development at the district level will be incorporated into the overall development plans of the district.

An important and new role for the lead agricultural sector ministries will be to ensure that LAs appreciate the importance of a strong and vibrant agricultural sector within their districts so as to give it the priority it deserves in the planning process as well as the allocation of funds. Therefore, LAs will allocate a proportion of their locally generated funds for agricultural development and thus qualify for grants to supplement their efforts for the development of the agricultural sector. Other sources of funds like the CDF will also be channelled to activities that give priority to agricultural development.

8 ORGANIZATIONAL AND IMPLEMENTATION STRUCTURES

8.1 Organizational Structures

Currently, the responsibilities for agricultural development are spread across the sector ministries. In addition, there are other ministries that are responsible for roads, LAs, administration, health, education, trade and industries, and finance that support the functions of the agricultural sector ministries. The ASDS will be implemented by key stakeholders in a sector-wide approach in which the Government sector ministries, the private sector and the development partners will each have distinct roles to play coordinated by ASCU.

8.1.1 The role of the agricultural sector ministries

All the implementation of ASDS will be carried out through established structure of Government ministries that go to the district, division and even location level. Each sector ministry will work out the activities under their dockets and make elaborate financing plans in the Medium Term Plans, which will be funded by the Government of Kenya, the development partners and the private sector. The implementation will be carried out through Medium Term Expenditure Framework (MTEF) of financial allocation by the treasury. The expenditure frameworks and the Medium Term Plans will be harmonized with the respective development documents currently being implemented by the planning and finance ministries to align to Vision 2030 and other Government development plans.

Collaborating ministries will be expected to play their critical role in providing the enabling environment for agriculture to thrive. This will include infrastructural

development in terms of roads and electricity, availing appropriate technologies, negotiating favourable trade conditions for Kenyan agricultural produce and ensuring a healthy farming population by controlling diseases such as malaria, tuberculosis and HIV/AIDS, which are the main killers of farming populations.

8.1.2 The role of ASCU

The Agicultural Sector Coordination Unit was established in 2005 to address the fragmentation of responsibilities between the agriculture and rural development-related ministries and non-state actors. ASCU was tasked to spearhead the implementation of the Strategy for Revitalizing agriculture (SRA), which was the sector strategy for addressing the *Economic Recovery Strategy for Wealth and Employment Creation* (ERS). The unit is made up of a small secretariat with personnel both, recruited competitively and seconded from key constituent ministries.

The mandate of ASCU is to facilitate and add value to the reform process and coordinate the sector ministries' and other stakeholders' efforts towards the implementation of the ASDS Vision, but not to implement activities on behalf of the stakeholders.

The Unit will play the key role of linkage and collaboration among the sector players as well as provide an enabling environment for sector-wide consultations along the various levels of implementation from the divisions to districts and national level. It shall not be involved in the actual implementation of the strategy. It shall, however, coordinate budgeting processes within the sector, participate in review of sub-sector strategic and annual work plans to ensure they conform to ASDS, the Vision 2030, the MDGs and other Government development agenda.

Specifically, the role of ASCU is to:

(i) Drive the reform processes in the sector and fast track ASDS implementation through better coordinated action across sector ministries and other partners

(ii) Be a referral centre for reforms; collect, analyze and disseminate information on agricultural reform

(iii) Influence sector resource allocation to areas of highest impact

(iv) Initiate major studies and policy developments within the agricultural sector

(v) Be a centre for capacity building for all stakeholders involved or affected by the agricultural reform process

(vi) Monitor implementation of ASDS activities.

To address the fast track interventions of the initial reforms, the following six Thematic Working Groups (TWGs) have been established:

(i) Legal, Regulatory and Parastatals Reforms

(ii) Research and Extension

(iii) Agribusiness, Value-Addition and Marketing

(iv) Inputs and Financial Services

(v) Food and Nutrition Security Policy and Programmes

(vi) Sustainable Land and Natural Resources Management.

Membership of the TWGs includes representatives of the private sector and non-governmental organizations, universities and directors/senior Government officers from the sector ministries and development partners. TWGs are chaired by a private sector representative and convened by directors from the sector ministries. ASCU provides the secretariat.

Thematic Working Groups carry out in-depth analysis of a particular fast track area of the SRA in order to prepare well structured and coherent plans for action and subsequent programmes for investment by the Government of Kenya and its development partners. As well as guiding implementation, piloting and other innovations within the sector, they are also charged with the preparation of various policy documents and their implementation frameworks.

8.1.3 Private institutions

Through the formation of the Kenya Private Sector Alliance (KEPSA), private sector players have been organized along sector boards to mirror the public

sector arrangements and facilitate issue-based engagements. The key players within the agricultural sector include KENFAP, charged with the representation of agricultural producers, and KNFC, which handles the commercial arm of agriculture through the cooperative movement. Other private sector institutions include processors, marketing agencies and farm input dealers that, through their profit-oriented nature, have somehow survived the times, but can neither be regarded as strong nor organized players.

To enable the private sector contribute to significantly to the development and growth of the agricultural sector, there will be a need to define clearly their role in the provision of physical and social infrastructure, production, processing, input and output marketing, imports and exports, provision of financial services and provision of goods and services. In order to facilitate effective participation, the appropriate legal and regulatory framework reforms shall be instituted.

8.1.4 Development partners and regional cooperation

Bilateral and multilateral donors have for many years played a significant role in financing Kenya's agricultural budget. In line with the country's increased financial capacity, the role of the development partners has been reduced and Government's own resources are now financing about 90 percent of the agricultural budget. However, development partners continue to play an important role, particularly in spearheading new initiatives and carrying out pilot projects.

Projects relating to provision of innovative ways of extension service, in addition to those that emphasize aspects of value addition and market orientations, have in many respects led to some of the new thinking and are now embodied in policies developed under ASCU and some of its TWGs. Of particular importance has been the development partners' support to the agricultural reform process.

Donors are increasingly aware of the importance of engaging in consultative processes with Government in order to support the latter's own programmes rather than picking stand-alone projects of their own choice. Increasingly, development partners are moving towards programme support thereby strengthening a sector-wide approach to development. Ultimately the aim is these shall provide their assistance using the Governments' budget system.

Kenya participates actively in a number of international and regional cooperation bodies such as EAC and COMESA. These bodies (or organizations) provide opportunities for expanding Kenya's market for goods and services. The New Partnership for Africa's Development (NEPAD) and the launching in Kenya of the Comprehensive African Agricultural Development Programme (CAADP) in 2006, which is a common strategic framework for agricultural policy development in Africa are important initiatives. Kenya fully adheres to the CAADP principles; ASDS is Kenya's tool to achieve its own version of CAADP.

ASDS is fully compatible with the CAADP's four pillars which include the following:

(i) Extending the area under sustainable land management and reliable water control systems

(ii) Increasing market access through improved rural infrastructure

(iii) Increasing food supply and reducing hunger by increasing smallholder productivity

(iv) Improving agricultural research and systems to disseminate appropriate technologies.

8.1.5 Local level structures

As the Government decentralizes decision-making processes to stakeholders, the local level governance and development structures will eventually become more involved in the management of development activities at community level. The Local Level Governance and Devolved Structures (LLGSs) will, through appropriate participatory methodologies, determine the priority development aspirations and initiatives of their communities and lead in implementation. Towards this effort, appropriate mechanisms will be developed and operationalized to facilitate increased participation of the LLGSs in fiscal responsibilities, including sourcing, utilizing, auditing and accounting of local resources, taxes and grants provided by the Government and the donors.

8.1.6 Farmers' organizations

Farmer organizations include cooperatives societies, farmers' unions and federations, commodity associations, enterprise-based groups and community-

based organizations. These organizations are important economic entities established to enhance representation of the farmer membership as well as lobby and advocate on their behalf at various levels. Their other role has been seen as enabling individual members to articulate demand and direct the same to the relevant sources of supply. Actual demand articulation and requisite interventions in shaping the sector policy environment have been key challenges faced by most of the organizations thus requiring commensurate capacity enhancement.

The organizations have to be clearly updated on the issues affecting the agricultural sector, which have an impact on the livelihoods of the membership. They also have to clearly articulate the concerns of their constituencies' elaborate systems and procedures, which enable them to collect, collate and update such concerns for purposes of engaging the relevant functions.

Representation occurs at various levels and so does the demand for precision in information gathered on the relevant issues at those levels. Effective management strategies shall be put in place to enable these organizations to play a key role in empowering farmers by pooling them together so that they are able to benefit from economies of scale.

8.1.7 Other non-state actors

The civil society continues to play an important role in many areas of the rural society and is envisaged to continue to do so. Civil society groups include NGOs, CBOs and FBOs. The importance of these groups has increased significantly over time. It remains a challenge to empower them to participate more effectively in implementing Government's agricultural policies and strategies. In view of this, this strategy will seek to enhance farmers' capacity to organize, generate and utilize resources more effectively.

8.2 Implementation

8.2.1 Result framework and impact orientation

The agricultural sector result framework shown as Annex 1 indicates 15 sector growth result areas and their respective necessary intervention strategies that

must be implemented urgently in order to contribute to the attainment of an average sector growth rate of 7 percent per year over the next five years envisaged in Vision 2030. This result framework is informed by Vision 2030 and other national planning documents such as the Vision 2030 MTP, MTEF and the Interim Investment Programme (IIP). Annex 2 shows the outcome mapping of the agricultural sector results for better impact orientation.

The intervention strategies outlined in Annexes 1 and 2 are broad enough to accommodate specific agricultural sector ministries and private sector activities. These activities will then form their respective contribution to the attainment of the sector result areas and will be detailed in the strategy implementation framework. The strategy implementation framework will then form the basis for the formulation of the respective ministries and private sector strategic plans.

8.2.2 Implementation framework

The strategy implementation framework shall be divided into Medium Term Plans (MTP) covering the period 2008-2012 in line with Vision 2030 MTP, 2013-2017 and 2018 onwards. The implementation of each MTP shall be underpinned by an integrated and holistic approach carried out through priority thrusts and associated interventions for addressing priority agricultural sector challenges and constraints. The implementation of the plans will further incorporate joint planning and participation so as to ensure that multiple views, needs and concerns in resolving priority agricultural sector issues at different levels are taken into account and negotiated.

The planned thrust areas will be addressed through nationally coordinated programmes and projects. Cross organizational synthesis, networking and sharing of lessons learned will be used to improve the programmes and projects outcomes. Better working relationship and partnerships between public, private and development partners will be established and maintained.

8.2.3 Medium Term Plans

The Medium Term Plans, which will be done in cycles of 5 years, will contain the activity, implementation time frame, implementing agency and financing plan. They will be in harmony and properly synchronized with the strategic plans of each ministry.

In order to ensure proper alignment of the results down the planning levels, the development of the implementation plan shall pick up the planning process from the intervention strategy level under each result area as outlined in the Agricultural Sector Result Framework and then unpack each intervention strategy into its necessary broad based activities. This will then be followed by an indication of the activity delivery time frame, responsibility for carrying out each activity, the intended users of the activity results and the expected outcome following the attainment of the activity. This information shall be summarized into an appropriate format. The cost of implementing each Medium Term Plan of the strategy shall be contained in a financing or investment plan.

8.3 Financing the Strategy

The cost of implementing the strategy will be shared between the Government with the assistance of development partners and the private sector. The principle enshrined in the sharing reflects the Government's deep commitment, on the one hand, to increase the operation and management of the productive sectors to those best placed to do so and, on the other hand, increase the control of economic affairs to the citizenry. This will increase efficiency of operations, reduce costs and improve distribution mechanisms for the resultant wealth. Therefore, the costing of this strategy will be part and parcel of the medium-term plan, Medium Term Investment plan from which the medium-term expenditure framework will be derived.

8.3.1 Innovation fund for agriculture and agribusiness

An essential component of the ASDS is to enhance the capacity of the private and public sectors in agriculture through support for innovative private sector activities or public-private partnerships that promote market-driven production, processing and marketing initiatives. This kind of support will be actualized through the establishment of an Innovation Fund for Agriculture and Agribusiness (IFAA). This fund is expected to support 'proof of concept' piloting interventions emanating from the work of the sector ministries.

IFAA is a competitive grant fund to support agriculture, livestock, fisheries, forestry, wildlife and agribusiness initiatives at all levels of the value chain from

production at farm level through value addition and marketing. The fund will render support to all sub-sectors of agriculture and agribusiness and be used across all commodities.

The objectives of IFAA are to support the following areas:

(i) Innovative production and ASDS-compliant initiatives of agribusiness such as those that overcome managerial, technological or market challenges

(ii) Value addition initiatives that enhance farmers' influence and ownership of and benefits from the value chain

(iii) Piloting of innovative public-private partnerships aimed at delivering critical agricultural services and technologies.

8.3.2 Agricultural Development Fund

Although the Government has increased the agricultural sector budget, it is unlikely to result in more investment in the sector. Therefore, there is an urgent need to establish and operationalize an Agricultural Development Fund (ADF) as a new mechanism for investing in the agricultural sector. It is anticipated that the fund will focus on strategic issues and areas stipulated in Vision 2030 as indicated in this strategy. The fund will cover areas that are outside the budgetary provisions of the mainstream sector ministries, but are of ultimate priority and with extremely high rates of return to investment.

9 COORDINATION, MONITORING AND EVALUATION

9.1 Coordination

In order to achieve the objectives set out in this strategy, it will be important to have an effective coordination, monitoring and evaluation framework. The wide range of actors that will be involved in the strategy will require a harmonized and coordinated framework for effective and efficient management of activities and resources. The framework provides for regular feedback between agencies charged and entrusted with the implementation of the strategy. An appropriate institutional framework that utilizes existing ministries and institutions to implement activities specified in the strategy and which facilitates the active participation of the private sector, the civil society and communities, is being developed.

The implementation framework will be structured at three levels that include national, middle and local level.

9.1.1 National level

At the national level, there is the biannual National Forum of the stakeholders in the sector, organized by the sector ministries and ASCU. This will ensure political will, give the strategy a niche and prominence, and provide a platform for reviewing progress in the implementation of the strategy and the extent to which its objectives are being achieved. The forum will discuss problems constraining progress and ways of overcoming them and consider current and future prospects. In order to give the forum adequate authority, the highest political authority will preside over it.

9.1.2 Middle level

The purpose of the middle level institutions is to provide a link between national and local level implementation of ASDS, technical support and coordination

between ministries and stakeholders. In this connection, the following institutions will be strengthened:

(i) The Inter-Ministerial Coordination Committee (ICC) will be expanded to include all ministries that provide services to the agricultural sector. The Committee will be composed of Permanent Secretaries of the lead and collaborating ministries and will be responsible for coordinating the planning of the strategy at the agricultural sector level and monitoring its implementation to ensure that its goals are being achieved.

(ii) The sector ministries have established a Technical Committee (TC) that acts as the Secretariat for the ICC. The TC consists of directors of sector ministries, private sector representatives, development partners and the ASCU secretariat. Its terms of reference will include preparation of technical guidelines for the implementation of the strategy and formulation of strategies according to MTEF budgetary process and the Medium Term Plan.

(iii) The sector ministries have established Thematic Working Groups (TWGs) that address key fast-track areas of the strategy in consultation with relevant sector players and resource persons.

9.1.3 Local level

At the local level, ASDS will be implemented through District Agricultural Development Committees (DADC) made up of the sector ministries and stakeholders. These DADCs will elect their chairman and secretaries on two-year rotation basis who will be linking with ASCU headquarters on project implementation. ASCU will organize requisite training and capacity support on implementation of the strategy to stakeholders.

Implementation will be carried out at local (district and division) levels. ASCU will strengthen the local multi-stakeholder forums to enable them serve farmers and other stakeholders in sector-wide approach. Priorities on implementation will be agreed upon at District Development Committees and DADCs as well as Constituency Development Committees. Measures will be instituted to encourage CDF committees to allocate resources to the agricultural sector development, with the aim of encouraging the youth to participate in agriculture.

9.2 Priorities Setting and Phasing

ASDS will be implemented over a 12 year period and will run parallel and be part and parcel of activities agreed on with the development partners on economic reforms, poverty eradication and food security. An initial Medium Term Plan will be prepared and synchronized with the Vision 2030's Medium Term Plan. However, the need for a rapid growth and development of the sector makes it necessary to identify and start with the implementation of actions in priority areas that lend themselves to fast-track actions which impact more significantly on the immediate needs for poverty eradication, food security and accelerating sector investment and development.

9.3 Monitoring and Evaluation System

Sector-wide monitoring and evaluation as well as periodic progress reviews will be undertaken by competent bodies under the auspices of ASCU. Corrective actions will be instituted along the programmes implementation stages. ASCU will further support and participate in sub-sectoral policy reviews and formulation as well as facilitate implementation of new policies by relevant stakeholders. It will continue to play any other relevant supportive role to any of the players in the sector.

Monitoring and Evaluation (M&E) will provide reliable and timely data to inform decision-makers and the public on progress, results and shortcomings of public interventions in the agricultural/food production sector. This is to enable management steer and fine-tune policies and programmes and also to create transparency as a basis for accountability to the public. Further, regular monitoring of trends and dynamics in the sector will be carried out. An independent professional body of Monitoring and Evaluation Experts will work closely with sector players under ASCU to ensure elaborate monitoring and evaluation and implementation of appropriate control measures along the implementation process.

At the local level, producer organizations will be enabled to participate in regular feedback mechanisms (e.g. customer satisfaction surveys that validate access to, use of and satisfaction with services) on agriculture-related public services. At

the national level, the National Integrated Monitoring and Evaluation System (NIMES) provides the framework for measuring efficiency of Government programmes and the effectiveness of policies. To provide regular information on the sector and sub-sector performance, the information originating from the different sources will be compiled in an agricultural sector M&E framework. Therefore, the existing M&E instruments (ministerial monitoring, agriculture/ rural household surveys, programme/project baseline surveys and monitoring systems) will be harmonized to reduce duplication and overlapping and fill gaps of information in a coordinated effort.

The M&E framework will compile indicators for the different sub-sectors (production, value-addition, marketing, natural resource management, food security, institutional development, etc).

The sector-wide M&E system will comprise selected indicators from each of the ministries in the sector. In adition, the private sector and research institutions will be included as data sources for analysis and use of the data. For each of the targets, different indicators addressing activities/inputs, outputs, use of output, benefit and results will be formulated.

For overall coordination of the inputs from different data sources, analysis of the data and elaboration of regular reports on national and provincial level, a coordination unit at national level within ASCU M&E framework will be established. The unit will have its basis in a partnership between the sector ministries and research institutions, including regular cooperation and exchange with universities in form of post-doctoral fellows and students. To achieve sustainability of the M&E system, funding of surveys and maintenance of the data bank should be assured before establishment.

With increasingly de-centralized structures, district stakeholder forums (e.g. DADCs) will obtain more accurate information on financial and technical support services to their locality. The public will be able to follow up the Government's expenditure in their locality and acquire information on what it has been spent on. Through the forums they will be enabled to decide more autonomously on how to make use of these resources. Also the satisfaction of farmers, fisher folk and pastoralists, with the actual access to and quality of public services (e.g. agriculture/livestock extension, access to rural infrastructure), will be included

into the M&E process as feedback in form of regular customer satisfaction surveys.

Strengthening this link between planning, budgeting, implementation and monitoring can be regarded as crucial for public participation in the policy cycle and accountability of the Government on its use of resources. A highly consultative and participatory monitoring and evaluation process will be adopted for the strategy as follows:

(i) The DDC will be responsible for the implementation of the strategy through the DADC at the district level. The district monitoring and evaluation team will be responsible for the whole district up to community level

(ii) The ICC will be responsible for monitoring the implementation of the strategy at the national level to ensure that the strategy is implemented for the benefit of the nation and that its goals are achieved

(iii) The Kenya National Bureau of Statistics (KNBS) and the ministerial monitoring units will carry out sample surveys, which will provide independent data sources to validate information flowing from the implementing units.

ANNEX 1: AGRICULTURAL SECTOR RESULT FRAMEWORK

Intervention Logic	Objective Verification Indicators by 2020	Means of Verification	Assumptions
Overall Goal Innovative, commercially-oriented, competitive and modern agricultural sector	**1.1** 7 percent growth rate of the agricultural sector per year **1.2** Increased agricultural sector contribution to Kenya's GDP	**1.1** National impact assessment reports **1.2** Economic survey reports **1.3** CBS surveys	**1.1** Social, political and economic stability will continue to prevail in the country **1.2** Government policies will continue to be favourable to the development of agricultural sector
Purpose To increase agricultural productivity, promote investment and encourage private sector participation in agricultural enterprises and agribusiness	**1.1** Number of policy and institutional frameworks formulated and successfully implemented **1.2** Percentage increase in agricultural productivity **1.3** Percentage increase in agricultural commercialization and competitiveness **1.4** Percentage increase in private sector investment in agricultural enterprises and agribusiness	**1.1** National impact assessment reports **1.2** Economic survey reports **1.3** CBS surveys **1.4** Published Bills and Laws **1.5** Contracts at the AG Chambers	**1.1** Enabling policy environment for agricultural development will prevail **1.2** Agricultural sector will continue to be a major driver of the national economy **1.3** Relevant external environment stability will prevail

	1.5 Percentage increase in the quantity, and quality of food available, accessible and affordable to all Kenyans at all times		
Sub-sector Strategic Focus			
1. Crop land development sub-sector	**1.1** Percentage increase in productivity, commercialization and competitiveness of the crops sub-sector	**1.1** Sector ministries and institutional reports **1.2** Private sector organizations reports **1.3** Economic survey reports **1.4** CBS surveys	**1.1** Social, economic and political stability will prevail **1.2** Conducive policy environment will be established and maintained **1.3** Stable macro-economic environment will prevail **1.4** Political will to undertake reforms will continue to prevail
2. Livestock sub-sector	**2.1** Percentage increase in productivity, commercialization and competitiveness of the livestock sub-sector	- Do -	- Do -
3. Fisheries sub-sector	**3.1** Percentage increase in productivity, commercialization and competitiveness of the fisheries sub-sector	- Do -	- Do -

4. Cooperatives sub-sector	**4.1** Percentage increase in market access, market information, internal and external trade and rate of payment to clients	- Do -	- Do -
5. Private sector participation	**5.1** Percentage increase in productivity, commercialization and competitiveness of the agricultural sector attributable to private sector participation	- Do -	- Do -
Production Sector Specific Focus			
6. Water resources and irrigation development	**6.1** Percentage expansion of irrigated land and availability of water for irrigation and other uses	**6.1** Sector ministries and institutional reports **6.2** Private sector organizations reports **6.3** Economic survey reports **6.4** CBS surveys	**6.1** Social, economic and political stability will prevail **6.2** Conducive policy environment will be established and maintained **6.3** Stable macro-economic environment will prevail **6.4** Political will to undertake reforms will continue to prevail
7. Land use	**7.1** Number of land use policies, legal and institutional reforms formulated and implemented	- Do -	- Do -

8.	Development of Northern Kenya and Arid and Semi-Arid areas	**8.1**	Number of successful collaborative development programmes contributing significantly to the improvement of the livelihoods and reduced vulnerability to drought and floods	- Do -	- Do -
9.	Improvement of environment and natural resource management	**9.1**	Percentage increase in area mapped, EIA/EA compliance, NR inventories and adoption of cleaner and sustainable land management practices	- Do -	- Do -
10.	Development of integrated river basins and large water bodies resources	**10.1**	Percentage increase in irrigated land, catchments cover, water storage capacity and energy generation	- Do -	- Do -
11.	Forest and wildlife resources	**11.1**	Percentage increase in forest cover, forest products and wildlife population	- Do -	- Do -
Enabling factors					
12.	Creation of an enabling environment for agricultural development	**12.1**	Number of sustainable investor/client friendly enabling environments created and successfully operationalized	**12.1** Published Bills, Laws, Gazette Notices, MoUs and Contracts **12.2** Sector ministries and institutional reports	- Do -

		12.3 Private sector organizations reports **12.4** Economic and CBS survey reports	- Do -
13. Development and implementation of appropriate framework for linking agricultural development with other sectors	**13.1** Number of effective and sustainable linkage mechanisms developed and successfully operationalized	- Do -	- Do -
Implementation Framework			
14. Organization and implementation structures	**14.1** Efficient and effective service delivery at devolved level	**14.1** ASCU Reports **14.2** Sector ministries and institutional reports **14.3** Private sector organizations reports **14.4** Customer satisfaction surveys **14.5** Economic and CBS survey reports	- Do -
15. Coordination, monitoring and evaluation	**15.1** Rate of utilization of resources **15.2** Percentage reduction in poverty levels and number of hungry people	- Do -	- Do -

Sub-sector Strategic Focus and Intervention Strategies	
1.0 Crop Land Development sub-sector **1.1** Formulation and implementation of appropriate policy and legal framework **1.2** Improvement of agribusiness and market access **1.3** Strengthening research, extension and training **1.4** Improvement of land use and crop development **1.5** Enhancing accessibility of affordable inputs and credit to farmers **1.6** Enhancing institutional efficiency and effectiveness in implementation and service delivery	**2.0 Livestock sub-sector** **2.1** Reviewing of policy, legal and institutional frameworks **2.2** Improvement of livestock productivity **2.3** Integrated development and management of rangelands **2.4** Improvement of animal health and quality assurance services **2.5** Improvement of market access **2.6** Establishment of a centrally coordinated livestock database **2.7** Implementation of disease free zones flagship project
3.0 Fisheries sub-sector **3.1** Development of marine capture fisheries **3.2** Development of inland capture fisheries **3.3** Development of aquaculture **3.4** Promotion of fish safety, quality assurance, value addition and marketing	**4.0 Cooperatives sub-sector** **4.1** Reviewing cooperative development policy and legal framework **4.2** Improving capacity for marketing of agricultural inputs and produce **4.3** Enhancing access to agricultural credit

	4.4 Promotion of value addition **4.5** Promotion of internal and external trade **4.6** Improving marketing information services
5.0 Private sector participation **5.1** Facilitating organization of smallholder producers at all levels **5.2** Development and implementation of a framework and instruments for strengthening institutional capacity of producer organizations **5.3** Fast tracking the legal and regulatory reforms to promote private sector engagement **5.4** Promotion of private sector participation in agricultural transformative services **5.5** Development of a mechanism for recognition and support to integrated agricultural product value chain innovations	**6.0 Improvement of water resources and irrigation development** **6.1** Finalization and implementation of national irrigation policy and legal framework **6.2** Intensification and expansion of irrigation **6.3** Improvement of rainwater harvesting and storage for agriculture **6.4** Rehabilitation and protection of water catchments **6.5** Implementation of the irrigation flagship project
Sub-sector Factor Specific Strategic Focus	
	7.0 Land use 7.1 Creation of a consolidated GIS-based land registry 7.2 Development and implementation of a land use master plan

	7.3 Investment in institutions and infrastructure 7.4 Settlement of landless poor
8.0 Development of Northern Kenya and Arid and Semi-Arid areas **8.1** Formulation and implementation of appropriate policy and legal framework **8.2** Investment in targeted rangeland developments **8.3** Increasing area under cultivation **8.4** Diversification of income sources for pastoral communities **8.5** Implementation of the ASAL development flagship projects	**9.0 Improvement of environment and natural resource management** **9.1** Improvement of environmental conservation **9.2** Improvement on pollution and waste management **9.3** Enhancing resource conservation and management **9.4** Management of mineral resources
10.0 Development of river basins and large water bodies resources 10.1 Implementation of policy and institutional reforms to strengthen regional development planning 10.2 Development and conservation of river banks, water bodies and catchments areas 10.3 Development and implementation of community support and empowerment programmes	**11.0 Forest and wildlife resources** 11.1 Formulation and implementation of appropriate forest and wildlife institutional, policy and legal frameworks 11.2 Development and implementation of appropriate mechanisms for protection, conservation and sustainable management of forest resources

10.4 Formulation and implementation of integrated basin based development programmes	11.3 Development and implementation of appropriate mechanisms for protection, conservation and sustainable management of wildlife resources 11.4 Strengthening of forest and wildlife research, extension and training 11.5 Implementation of forest and wildlife flagship projects
Enabling Factors	
12.0 Creation of an enabling environment for agricultural development 12.1 Macroeconomic stability 12.2 Taxation System 12.3 Governance 12.4 Education, training, science and technology 12.5 Infrastructure	**13.0 Human and social development** 13.1 Improvement of human health and labour availability 13.2 Gender 14.3 Empowering youth 13.4 National security 13.5 Participatory planning
Organization and Implementation Structures	
14.0 Formulation and implementation of appropriate institutional frameworks 14.1 The role of agricultural sector ministries 14.2 The role of Agricultural Sector Coordination Unit	**15.0 Coordination, monitoring and evaluation** 15.1 National level 15.2 Middle level

ANNEX 2: OUTCOME MAPPING OF THE AGRICULTURAL SECTOR STRATEGIC GROWTH RESULT AREAS FOR BETTER IMPACT ORIENTATION

Agricultural sector strategic growth result areas	Implementing agencies	Outcome	Impact
Sub-sector Strategic Focus and Intervention Strategies			
1. Crop land development sub-sector	Sector ministries, private sector organizations/ institutions, development partners, MoPND, AG Chambers, MoF, and Parliament.	Increased productivity, commercialization and competitiveness of the crops sub-sector	Improved livelihoods, income generation, employment creation and food security
2 Livestock sub-sector	-Do-	Increased productivity, commercialization and competitiveness of the livestock sub-sector	Improved livelihoods, income generation, employment creation and food security
3. Fisheries sub-sector	-Do-	Increased productivity, commercialization and competitiveness of the fisheries sub-sector	Improved livelihoods, income generation, employment creation and food security
4. Cooperatives sub-sector	-Do-	Strengthened and efficiently managed cooperatives and increased agribusiness leading to increased volume of internal and external trade on value added agricultural products	Improved livelihoods, income generation, employment creation and food security

5.	Private sector participation	-Do-	Strong producer organizations actively engaged in policy, research and extension design and development operating in a conducive environment with appropriate investment incentive packages	Improved livelihoods, income generation, employment creation and food security
Sub-sector Factor Specific Focus				
6.	Improvement of water resources and irrigation development	-Do-	Enhanced availability and accessibility of water for irrigation and other uses and reduced vulnerability to drought and effects of floods	Improved livelihoods, income generation, employment creation and food security
7	Land Use	-Do-	Consolidated land registry and agricultural land use master plan	Equitable, efficient and sustainable use of land resources
8	Development of Northern Kenya and Arid and Semi-Arid areas	-Do-	Unified and coordinated ASAL areas development efforts of different ministries and other stakeholders	Faster and sustainable development of the arid and semi-arid areas
9	Improvement of environment and natural resource management	-Do-	Improved agricultural productivity and sustainable natural resources management	Clean, healthy and productive environment
10	Development of river basins and large water bodies resources	-Do-	Efficient and effectively utilized and managed basins and large water bodies resources	Improved livelihood in the river basins and large water bodies regions
11	Forest and wildlife resources	-Do-	Increased forest cover, forest products and wildlife population	Improved livelihood in a clean, healthy and productive environment

Enabling Factors			
12. Creation of an enabling environment for agricultural development	-Do-	Functional investor friendly environment	Increased investment in the agricultural sector
13. Human and social development	-Do-	Increased participation of players in the agricultural development process	Increased direct and indirect contribution to agricultural sector growth/development
Organization and Implementation Structure			
14. Formulation and implementation of institutional frameworks	-Do-	Increased public and private sector partnerships	Increased productivity, commercialization and competitiveness of the agricultural sector
15. Coordination, monitoring and evaluation.	-Do-	Effective and efficiently managed implementation frameworks at different levels	Faster and sustainable agricultural sector growth