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THE NATIONAL AGRICULTURAL RESEARCH POLICY

MINISTRY OF AGRICULTURE ANIMAL INDUSTRY AND FISHERIES
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THE NATIONAL AGRICULTURAL RESEARCH POLICY

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ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immunodeficiency Disease Syndrome
ARDCs	Agricultural Research and Development Centres
ARTTs	Agro-ecological Research and Training Teams
DFID	Department for International Development (of the United Kingdom)
EC	European Commission
GoU	Government of Uganda
HIV	Human Immunodeficiency Virus
MAAIF	Ministry of Agriculture, Animal Industries and Fisheries
MFPED	Ministry of Finance, Planning and Economic Development
NAADS	National Agricultural Advisory Services
NARO	National Agricultural Research Organisation
NARS	National Agricultural Research System/Service
NSRGs	National Strategic Research Groups
PARIs	Public Agricultural Research Institutes
PEAP	Poverty Eradication Action Plan
PMA	Plan for Modernisation of Agriculture
RMEs	Research Management Entities
UNCST	Uganda National Council of Science and Technology
US $	United States Dollar

FOREWORD

The Plan for the Modernisation of Agriculture (PMA) is a holistic policy and strategic framework that seeks to address poverty eradication through agricultural transformation. It is an integral part of the Government's broader strategy for poverty eradication as detailed in the Poverty Eradication Action Plan. The overall objectives of the PMA are to increase incomes and improve the quality of life of poor subsistence farmers, to improve household food security, to provide gainful employment and to promote the sustainable use and management of natural resources.

Seven priorities are identified in the Plan that will require sustained investment of public resources if the transformation of agriculture is to become a reality. Two of them, which fall directly within the mandate of the Ministry of Agriculture, Animal Industry and Fisheries, are agricultural research and technology development, and the provision of agricultural advisory services. The PMA places emphasis not only on enhancing research and extension efforts, but also on this taking place under institutional arrangements that have been transformed to ensure increased responsiveness to farmers' needs.

Observers have explained that the low productivity of Uganda's agriculture is a result of poorly functioning farmer-extension-research-market linkages and the consequent failure of the research and extension systems to respond to the real needs of the farming community. At the same time it has become clear that, to a large extent, the public agricultural research capacity has not been well maintained, nor is it well positioned to foresee and respond to the changing competitive challenges arising from the liberalisation of the economy. While it has striven to respond to the needs of the poor and of managing the country's natural resource base, this has not been to the levels desired. At the same time, the client base for the National Agricultural Research System (NARS) is not well organised. This calls for major changes.

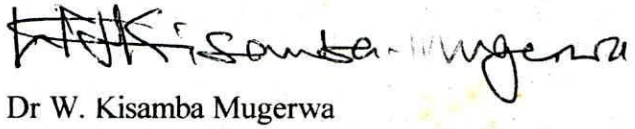
The PMA envisages a "... farmer responsive research system that generates and disseminates problem-solving, profitable and environmentally-sound technologies on a sustainable basis" that will result in "the generation, adoption and dissemination of appropriate and demand-driven technologies, knowledge and information through an effective, efficient, sustainable, decentralised and well co-ordinated agricultural research system".

It was in light of this situation that I decided in late-2001 to direct that work be undertaken on drawing up a new National Agricultural Research Policy. I emphasised the need for the policy to be one that, at its core, sought to empower rural producers, particularly the poor and women, to demand and control the agricultural research processes and services. In addition it was to reflect the national policies of decentralisation, liberalisation, privatisation and increased participation by the population in decision-making. I believe it does.

Those involved in drawing up the Policy extensively consulted groups and individuals interested or involved in agricultural research, throughout the country. The result is a policy that represents the broad consensus that was reached on the principles, strategies, outcomes and outputs of the NARS.

I appreciate the support, which has consistently been provided by our development partners, in particular the World Bank, EC and DFID, in supporting the NARS Review Task Force, which drew up the NARS Reform Programme. This document prepared the way for the National Agricultural Research Policy. Support is continuing to be provided to the Core Implementation Team, which has, among other things, recently finalised this policy document. We look forward to all of our development partners supporting the realisation of the various aspects of the policy, through working with us to implement the extensive programme of research work that is currently being drawn up.

The Policy provides us with a comprehensive road map for the development of agricultural research in the country. It is up to all of us – central and local government, the private sector, civil society, development partners and the farming community - to co-ordinate our efforts and our resources in ensuring the realisation of the Policy goal as quickly as possible. Only in this way will the transformation of agriculture be brought about and poverty eradication in Uganda becomes a reality.



Dr W. Kisamba Mugerwa
Minister of Agriculture, Animal Industry and Fisheries,
Entebbe

EXECUTIVE SUMMARY

Agriculture is the main stay of Uganda's economy. It accounts for approximately one-third of the national Gross Domestic Product, 85% of the export earnings and provides employment to over 80% of the population especially in the rural areas. For this reason, Government has put special focus on agriculture during formulation of socio-economic policies aimed at improving peoples' welfare.

Uganda's comprehensive development framework is the Poverty Eradication Action Plan (PEAP). The four pillars of the PEAP are (a) creating a framework for rapid economic growth and structural transformation, (b) ensuring good governance and security, (c) directly increasing the ability of the poor to raise incomes, and (d) directly increasing the quality of life of the poor. Under the goal of increasing farmers' income, Government has formulated and operationalised the Plan for Modernisation of Agriculture (PMA). The PMA is a holistic strategic framework for eradicating poverty through multi-sectoral interventions. It is aimed at transforming subsistence farmers into market-oriented commercial producers. It is an outcome-focused set of principles upon which intra-and inter-sectoral policies and investment plans can be developed at both the central and local government levels. The National Agricultural Research System (NARS) is a key player in the implementation of the PMA

The National Agricultural Research Policy aims at focussing the NARS on providing research services that address in a sustainable manner, the needs and opportunities of the poor in a market driven environment. The policy is to promote the delivery of high quality and efficient agricultural research services by enhancing the participation and co-ordination of the public as well as the private service providers. The farmers (particularly the poor women and men) are to be empowered to demand and control agricultural research processes and services, within the wider Government policies of decentralization, liberalization, privatisation and increased participation of the people in decision-making, without necessarily compromising sound scientific judgement.

The cardinal principles on which the NARS policy is based are: Responding to market opportunities, Empowerment of stakeholders, Scientific Integrity and Professional Excellence, Decentralisation of research services, Promoting participation of private sector, civil society and farmers, Separating public funding from research services' delivery, Mainstreaming gender into agricultural research, Social, human and environmental concerns and Quality assurance of agricultural research services.

The NARS embraces a cross-section of stakeholders from both public and private institutions. The policy provides for the establishment of an apex body called the National Agricultural Research Organisation (NARO) to take charge of all matters concerning agricultural research in Uganda. The strategies for implementation of the Policy, as guided by the key principles, emphasise collaboration, linkages and partnerships with other stakeholders in the agricultural sector and related sectors, and institutions of local government during planning and implementation of research activities.

1.0 INTRODUCTION

1.1 Background

For the last 16 years, Government of Uganda (GoU) has been implementing policy reforms in the social, political and economic arena to address the constraints that hinder national development. These include decentralisation, democratisation, liberalisation, privatisation and public service reforms.

The objective of all these reforms has been to take services closer to the people, empower the masses, reduce government monopoly, build capacity in the private sector, optimise the utilisation of resources and promote good governance. This has led to economic growth and an improvement in the welfare of the population at large. National economic growth has averaged 5% in the past decade, and annual inflation has been reduced from over 100% between 1982 and 1990, to an average of 6% during the last decade.

Despite these impressive achievements, the country still remains largely poor. The *per capita* income is US $330 (1999/2000)[1], far below the average for Sub-Saharan Africa (US $470)[2]. Approximately 35% of the population still lives in absolute poverty, and the actual income gains have been skewed in favour of the urban sector, with little benefits accruing to the rural smallholders.

It is against this background that GoU put in place the Poverty Eradication Action Plan (PEAP, 2000), as Uganda's comprehensive development framework. The main goals of PEAP are:

- creating a framework for rapid economic growth and structural transformation;
- ensuring good governance and security;
- directly increasing the ability of the poor to raise incomes; and
- directly increasing the quality of life of the poor.

Under the PEAP's goal of increasing farmers' income, Government has formulated and operationalised the Plan for Modernisation of Agriculture (PMA). The PMA is a holistic strategic framework for eradicating poverty through multi-sectoral interventions. It is aimed at transforming subsistence farmers into market-oriented commercial producers. It is an outcome-focused set of principles upon which intra-and inter-sectoral policies and investment plans can be developed at both the central and local government levels.

[1] Source: Uganda Bureau of Statistics
[2] Source: World Bank – World Development Indicators Data Base, 2002

To enhance attainment of the goals and objectives of PMA, government has identified priority intervention areas for public expenditure. These are:

- agricultural research and technology development;
- agricultural advisory services;
- rural finance;
- agro-processing and marketing;
- agricultural education;
- sustainable resource management;
- supportive physical infrastructure;
- funding poverty-reducing agricultural interventions identified by communities through the Non-sectoral Conditional Grant and the Local Government Development Programme Grant.

Agriculture is the main stay of Uganda's economy. It accounts for approximately 40% of the national Gross Domestic Product, 85% of the export earnings and provides employment to over 80% of the population especially in the rural areas. For this reason, Government has put special focus on agriculture during formulation of socio-economic policies aimed at improving peoples' welfare.

Agricultural research is expected to play a leading role during implementation of the PMA programme, by generating and disseminating appropriate technologies that will increase the production and productivity of agricultural enterprises. Technological changes will also reduce the cost of production, leading to lower and stable consumer prices and making farming an increasingly profitable activity. Research should particularly target the poor farmers who constitute more than 70% of the farming population. This calls for the formulation of an agricultural research policy that is in conformity with the PMA principles and other national policies.

1.2 Current status of the National Agricultural Research System

A National Agricultural Research System (NARS) is made up of entities that undertake and/or deliver agricultural research services. These services range from simple experimentation for learning to systematic intensive scientific investigation into increasingly complex issues and phenomena. This broad definition of agricultural research implies that entities in the NARS range from highly specialised institutions to individuals, each engaging in aspects of research in accordance with the resources available to them.

The body that oversees scientific research and technology development in all sectors in the country is the Uganda National Council of Science and Technology (UNCST), established by Statute No. 1 of 1990 under the Ministry of Finance, Planning and Economic Development (MFPED). Its mandate is:

> *"to promote, advise and co-ordinate the formulation of national research policies and fostering the integration of science and technology into Uganda's economic and social development".*

The UNCST Policy approved in 2001 states that the formulation and management of sectoral science, research and technology development policies will be the responsibility of the relevant Ministries. In the case of the agricultural sector, the mandate for agricultural research and technology dissemination was delegated to the National Agricultural Research Organisation (NARO), a body corporate under the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF).

NARO was created by Statute in 1992, as a dominant semi-autonomous agency to guide and consolidate public research services that were formerly scattered across several ministries. It has a Board that guides the public agricultural research agenda. Through its Secretariat, Research Institutes, Stations, Centres, partnerships, networks and linkages, NARO manages research programs and implements research projects. The bulk of public funding for research, in the form of grants and loans from development partners and Government subvention, is channelled through NARO.

The Organisation brought together a fragmented set of institutes within a single structure. NARO is mandated to undertake, promote and co-ordinate research for crops, livestock, fisheries and forestry and to ensure the dissemination and application of research results. To a large extent, NARO has satisfactorily performed this function as entrusted to it. NARO programs are implemented through nine institutes supported by a Secretariat located at Entebbe. The institutes are:

- Agricultural Engineering and Appropriate Technology Research Institute;
- Coffee Research Institute;
- Fisheries Resources Research Institute;
- Food Science and Technology Research Institute;
- Forestry Resources Research Institute;
- Kawanda Agricultural Research Institute;
- Livestock Health Research Institute;
- Namulonge Agricultural and Animal Production Research Institute; and
- Serere Agricultural and Animal Production Research Institute.

A number of Agricultural Research and Development Centres have been set up to cater, among other things, for zonal agro-ecological research needs and to support the outreach programme, among other functions.

In addition to NARO, there are other institutions, operating outside NARO's institutional framework, that constitute the National Agricultural Research System in the country. They include, but are not limited to, the following:

- Universities and other tertiary institutions. Makerere University is the main player at present.
- Other publicly funded research centres and institutions, like the Uganda Industrial Research Institute.
- Private sector companies and agencies, and
- Civil Society Organisations, including Non- Governmental Organisations and Farmers' Organisations.

The current NARS institutional arrangement does not substantially empower the traditional clients of agricultural research (poor farmers) to be able to demand research services at all levels. Similarly, they do not exercise adequate control over the organs that make decision on the agenda for research. Furthermore, the farmers are not organised in a manner that can generate and sustain pressure for increased and sustained public support to agricultural research. Other notable deficiencies in the current system include:

- failure to recognize and involve, in a coordinated manner, the variety of organisations that can potentially participate in agricultural research, both for funding and execution;
- inadequate mechanisms for ensuring improved efficiency and effectiveness of public sector research; and,
- failure to commit public resources to spearhead the growth of private sector research capacity.

1.3 Justification for a National Agricultural Research Policy

The UNCST Policy governs, scientific research in Uganda. The Policy states, among other things, that sectoral science and technology policies will be formulated by the respective sectors.

Currently, there is no consolidated agricultural research policy, and legislation governing agricultural research is fragmented. As a result, agricultural research is not adequately co-ordinated. The NARO Statute (1992) caters only for the public research institutions within the MAAIF. It does not cover other public institutions engaged in agricultural research such as Universities, which are regulated by the Universities and Tertiary Institutions Act. Similarly, the NARO Statute does not provide for the involvement of private sector institutions in publicly supported research. Secondly, although NARO has contributed significantly to technology development and dissemination, its institutional framework and research programmes were developed before the formulation of the PMA. It, therefore, does not fully address some of the key principles of PMA and macro-economic/public service reforms.

In response to the needs stated above, a comprehensive National Agricultural Research Policy has been formulated. The policy addresses the entire NARS, and will guide the generation and dissemination, and promote uptake of improved technologies for agricultural development in Uganda. It will also define the vertical as well as horizontal linkages of national and local research bodies with other stakeholders such as the National Agricultural Advisory Services (NAADS), local governments, private sector and the research institutions outside Uganda. It is meant to improve substantially on the efficiency, effectiveness, responsiveness and relevance of agricultural research, building on the gains already realised through the current institutional arrangements.

2.0 THE NATIONAL AGRICULTURAL RESEARCH POLICY

2.1 Definition of agriculture

Agriculture, in the context of this policy, is defined as the production and utilisation plants, animals and fishes and the management of the environment in which they are raised for producing food, drink, fibre and wood. It is the science, art or practice of cultivating the soil; breeding, keeping or producing animal or vegetable/plant life; afforestation and the gathering of forest products; catching, gathering, breeding, keeping or producing marine life from ocean, coastal or inland waters; and in varying degrees the preparation and marketing of crop, animal, forest and fish products, all especially for the purpose of people making a living.

2.2 Vision, Mission and Goal

In consonance with the vision and guiding principles of the PMA, the **Vision** that will guide the National Agricultural Research Policy is:

> *"A market-responsive, client-oriented and demand-driven national agricultural research system comprising public and private institutions working in tandem for the sustainable economic growth of Uganda".*

The **Mission** for agricultural research is:

> *"To generate and disseminate appropriate, safe and cost-effective technologies, while enhancing the natural resource base".*

In pursuit of the vision and mission, the **Goal** of the Policy shall be:

> *"To enhance the contribution of agricultural research to sustainable agricultural productivity, sustained competitiveness, economic growth, food security and poverty eradication".*

2.3 Guiding principles of the Agricultural Research Policy

The Government's macro-economic and public service policy reforms such as liberalisation, privatisation, decentralisation and democratisation guide the National Agricultural Research Policy. It is derived from, and based upon, the basic principles of PMA aimed at poverty eradication by targeting mainly the subsistence farmers and also creating an enabling environment for the commercial producers. The key principles of the policy include, but are not limited to, the following:

2.3.1 Responding to market opportunities

The policy shall ensure the continued generation and promotion of strategic technologies, services and information that will enable producers and the country to carve a niche in the global market arena and enhance the commercialisation of activities in the agricultural sector.

2.3.2 Empowerment of stakeholders

The policy will promote and provide for the constructive engagement of the clients of NARS (farmers, processors, traders, private sector, civil society) in problem identification, priority setting, planning, implementation, monitoring and evaluation of research programmes. Special emphasis will be on ensuring that the research services especially target increasing income opportunities and livelihoods of poor farmers, women and other economically disadvantaged groups in society.

The policy shall also ensure the appropriate recognition of and reward to scientists and technicians and shall promote their professional growth and continuous skills' improvement, with special emphasis to women scientists and technicians. This will ensure that the national research agenda is driven by user demands and scientific rigour, within the context of the wider national interests, while generating scientific discoveries that will benefit a wider range of people and industry. It shall provide for exploitation of complementarities and synergies arising out of appropriate private-public collaboration. It shall also promote the matching of human resources and skills from various sources with research needs and opportunities through the development of formal and informal partnerships with a variety of service providers.

2.3.3 Scientific Integrity and Professional Excellence

The policy shall ensure that agricultural research activities are adequately guided by the quality of science and professionalism, and that the science and technology base is protected and strengthened to ensure continued improvement in the

incomes and livelihoods of the people of Uganda. In particular, the policy shall ensure that contracted scientists and professional agriculturalists pursue their research activities in accordance with dictates of professional and scientific judgement, independent of undue interference from the contracting entities.

2.3.4 Decentralisation of agricultural research services

In addition to functions which must be performed at the central level of Government, the policy will ensure that the demand, supply and funding of agricultural research services will also include substantially expanded participation by stakeholders at local levels, in a manner consistent with the principle of subsidiarity. Core public research capacity will take into account the zonal agro-ecological and, where necessary, district-specific needs for research. The public research institutes will be given a high degree of autonomy in order to enable them to operate more effectively and efficiently. The policy will also provide a framework for farmers to identify priorities for research and will enable the local governments to procure research services to address the specific needs of their farmers.

2.3.5 Promoting participation of private sector, civil society and farmers

The national agricultural research policy takes cognisance of the need for the various players (e.g. line agencies, private sector and civil society) to work in partnership for sustainable development. The private sector, civil society and farmers, as major partners in the NARS, will participate in research by contributing to funding, acting as research service providers, and/or identifying and prioritising research needs.

2.3.6 Separating public funding from research services' delivery

The policy acknowledges that, for many agricultural research activities and services, efficiency and effectiveness can be raised by opening up provision of agricultural research to multiple service providers, e.g. universities, public research institutes, private sector organisations, non-governmental/ civil society organisations, farmers organisations, etc. Consequently for some research initiatives, the funds from the public sector will be used to contract service providers on a competitive basis. Other core research activities would continue to receive dedicated public funding.

2.3.7 Mainstreaming gender issues and concerns

Considering that men constitute only 30% of the farmers, the research policy will ensure that the research priorities and programmes pay special attention to gender rights and responsibilities/ obligations. Through participatory processes, technologies generated will also address the interests of the youth, the elderly, disadvantaged groups and people with disabilities.

2.3.8 Mainstreaming social, human and environmental concerns

The sustainability of agricultural production largely depends on proper use of the natural resources. Environmental concerns will be taken into account in all the technology generation processes.

One of the constraints to increasing the productivity of the agricultural sector is the prevalence of health hazards, such as the HIV/AIDS scourge and malaria. Their effects have been the reduction of the labour efficiency, since they are most prevalent in the most active age bracket for agricultural production. In addition, resources (time and money) are spent on the treatment and care of patients, as well as orphans.

The agricultural research policy will ensure that the technologies, knowledge and information generated take into account the special needs of people affected by health hazards.

2.3.9 Quality assurance of agricultural research services

To ensure that the outputs and outcomes of the NARS are relevant and are delivered effectively and efficiently, particular emphasis is to be put on ensuring the quality of the services rendered. Setting standards and regulations, and putting in place appropriate participatory monitoring and evaluation mechanisms will achieve this. Monitoring and evaluating agricultural research has two purposes; on the one hand, it is intended to ensure that the programmes are implemented according to work plans, and that research is conducted according to the regulations and standards, to ensure quality. On the other hand, it is intended to ensure that the research results answer the priority needs of the clients – notably the farmers. As a result of the policy, an institutional framework that will ensure the participation of key stakeholders in monitoring and evaluation activities will be put in place.

2.4 Objectives

The objectives of the policy are to:

1. promote the delivery of high quality and efficient agricultural research services by enhancing the participation and co-ordination of the public as well as the private research service providers;

2. empower farmers by involving them in identifying and prioritising their research needs and in procuring agricultural research services, while technically and professionally guiding them to make informed choices. This aims at moving them out of subsistence agriculture, including nomadism, to market-oriented production;

3. utilise the best of science and indigenous knowledge, in accordance with the dictates of professional ethics and scientific judgement, for implementing agricultural research programmes;

4. guide the NARS stakeholders in the formulation and prioritisation of agricultural research programmes as well as ensuring that the country's strategic, basic, applied and adaptive research needs are addressed;

5. address the critical needs of agriculture-based industries, and in particular to ensure that research outputs have a clear market niche and commercialisation opportunities;

6. put in place a sustainable funding mechanism that will harness resources from both the local and international, public and private sectors for agricultural research;

7. indicate the modalities under which external (development partners) assistance would be harmonised and channelled in support for the NARS;

8. provide guidance on the human resource needs for carrying out agricultural research as well as appropriate incentive schemes that recognize and reward scientific expertise and contribution and ensure continuous skills development;

9. provide a realistic and workable institutional framework for agricultural research and to define the roles of various stakeholders (public sector, private sector, civil society and farmers' organisations), including vertical and horizontal linkages with other institutions and programmes; and

10. provide the legal framework for the National Agricultural Research System.

3.0. POLICY STRATEGIES

The strategies for implementation of the Agricultural Research Policy will be guided by the key principles, as outlined in Section 2.3. They will also emphasise collaboration, linkages and partnerships with other stakeholders/service providers in the agricultural sector and related sectors, e.g. education, natural resources, during the planning and implementation of research activities. The NARS institutions will dovetail with other programmes, especially in adaptive research to ensure that the technologies and information generated are disseminated and made available to the farmers. Collaboration with the institutions of local government (Districts, sub-counties, urban councils) will promote the integration of agricultural research services into the decentralised system of government.

In general, the strategies formulated will address specific policy areas, as outlined below.

3.1 Promoting delivery of quality and efficient agricultural research services

Policy statement: *The participation of public and private service providers in publicly funded agricultural research activities, shall be co-ordinated to promote delivery of high quality and efficient agricultural research services.*

The delivery of high quality and efficient research services is the key to ensuring the effectiveness of agricultural research. The policy will, therefore, provide guidance and an enabling environment for all stakeholders involved in the delivery of this service.

The following strategies shall be implemented:

- formulating or reviewing legislation and regulations governing the conduct of different types of research, such as the use of biotechnology and intellectual property rights;
- setting or reviewing standards of agricultural research delivery;
- ensuring the scientific integrity of agricultural research activities through safeguarding the professional independence (subject only to professional review) of researchers with regard to the methodologies used in their research activities;
- providing guidelines and guidance to the research service providers;
- undertaking an inventory and registration of potential research service providers in the public and private sectors;

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- rationalising the distribution of the public agricultural research infrastructure to ensure equitable access;
- creating centres of excellence in research on specific topics and disciplines in the agricultural sector;
- carrying out monitoring and evaluation of the research programmes, projects and activities to ensure adherence to the set standards and regulations and appropriate response to implementation challenges;
- promoting output (results)-oriented planning, budgeting and implementation of research programmes, so as to ensure cost-effective expenditure;
- strengthening collaboration and linkages with other service providers in the agricultural and related sectors, in order to rationalise and optimise the use of resources, thus enhancing synergy and complementarities as well as avoiding duplication and possible conflict; and
- developing, promoting and initiating improved methods and systems for multi-agency, multi-stakeholder technology identification, assessment, packaging and promotion so as to facilitate the flow of information from research and backwards to the end users through intermediaries.

3.2 Empowering farmers

Policy statement: *Farmers will be empowered to enable them to participate in identifying and prioritising their research needs and in procuring research services.*

The empowerment of farmers and other stakeholders is aimed at promoting ownership of the research programmes and outputs since they are the ones to translate the results of research into outcomes (increased productivity, more agro-processing and expanded marketing).

The following strategies will be implemented:

- promoting the formation or strengthening of farmers' groups and fora at various levels of local governments, in collaboration with other institutions operating at those levels, through which research needs will be articulated;
- ensuring the formation of local consortia to play a greater role in the technology management and commercialisation initiatives of NARS institutions;
- building the capacity of farmers, individually or in groups, to make informed decisions and have the means to move out of subsistence agriculture into commercial agriculture;

- enhancing participatory planning by involving farmers in priority setting and conducting agricultural research in their localities, with particular reference to problem-solving, adaptive research;
- empowering local governments with resources (funds, technical assistance, infrastructure) to enable them to demand and contract research service providers, so as to solve location–specific problems;
- appointing farmers and other stakeholders on the Boards and Committees of the NARS institutions;
- promoting decentralisation and de-concentration of public agricultural research infrastructure, and making institutions more autonomous and accountable for their programmes and activities, while continually empowering the decentralised structures in the planning, monitoring and evaluation of research activities; and
- promoting participatory monitoring of research services by involving all stakeholders (farmers, inputs suppliers, processors, marketing agents local governments and central government).

3.3 Formulation and rationalisation of agricultural research programmes

Policy statement: *Agricultural research programmes shall be formulated, rationalised and prioritised with stakeholders' participation so as to ensure that the country's strategic, basic, applied and adaptive research interests are addressed.*

The success of the NARS will be largely judged by (a) the quality, quantity and relevance of research outputs and outcomes in relation to the needs of both the farmers and to the nation as a whole; (b) cost-effectiveness of activities undertaken; and (c) the level of adoption and uptake of new technologies. Therefore, the formulation and execution of research programmes will be guided by the following strategies:

- ensuring the scientific integrity of agricultural research activities through safe-guarding the professional independence (subject only to professional review) of researchers with regard to the methodologies used in their research activities;
- providing a clear categorisation of research into strategic, basic, applied and adaptive research, and prioritising within each category, including definition of the aspects of research that are of a *"public good"* nature and those which the private sector is most suited to fund;

- ensuring that all aspects of agriculture (crops, livestock, fisheries, forestry production systems including their socio-economic aspects) are covered in the research agenda;
- promoting the use of innovative research approaches by organising the institutional and inter-disciplinary research partnerships in form of groups or teams to be responsible for specific research themes at the national, agro-ecological (zonal) and district levels;
- formulating or reviewing research plans for the NARS public research institutes, with particular regard to the national basic and strategic research interests; and
- promoting co-operation and collaboration with international research institutions so as to enhance utilisation of the currently available modern techniques, technologies, skills and information.

In formulating the national agricultural research plans and programmes, special focus will be on the following priorities:

- ensuring that poverty eradication is the driving force behind agricultural research, as envisaged in PEAP and PMA;
- technology development and multiplication including import, adaptation and adoption of high yielding, disease and pest-resistant planting and stocking materials;
- socio-economic research including participatory needs assessment, technology adoption and impact studies, policy research and analysis, cost-benefit studies, gender-responsive technologies;
- research on agricultural related aspects of poverty and food security;
- recent developments related to the agricultural sector including genetic resources conservation and biotechnology, globalisation of world markets and Trade Related Intellectual Property Rights and their implications for PMA;
- application of information technologies in developing decision support systems (e.g. crop modelling);
- farm power and post-harvest technologies, including animal traction, solar, wind, biogas, storage, preservation of perishable commodities and agro-processing;
- land and water resources management, including soil fertility, land degradation, production systems (for crop, livestock, aquaculture, agro-forestry), water harvesting techniques and irrigation;

- sustainable natural resource utilisation including capture fisheries, biodiversity conservation, and environmental-friendly technologies; and
- integrating indigenous knowledge into modern and improved technologies including disease and pest control, preservation as well as improving palatability of foods.

3.4 Utilising the best of science for implementation of research programmes

Policy statement: *Agricultural research programmes shall be implemented in accordance with dictates of professional ethics and scientific judgement.*

The success of the NARS will also be judged by the quality of science and level of professionalism employed in the generation of research outputs. Therefore, the formulation and execution of research programmes will be guided by the following strategies:

- ensuring the scientific integrity of agricultural research activities through safe-guarding the professional independence (subject only to professional review) of researchers with regard to the methodologies used in their research activities;
- strengthening overall innovative capacity of scientists, particularly the application of high-end technologies and sciences such as biotechnology, information technology, geographical information system and material science in enhancing the productivity of agriculture and natural resources sectors;
- ensuring the full participation of higher agricultural education agencies in the NARS and promoting and supporting relevant and up-to-date science education at undergraduate and postgraduate levels in universities and other tertiary institutions in Uganda and abroad;
- promoting incentives for recruitment and retention of highly qualified scientists and technicians, and their continuous skills' improvement through training;
- improving and acquiring premises, buildings, equipment and other research facilities in accordance with new technological advances;
- recruiting, when desirable, foreign expertise, talent and/or facilities for the resolution of research problems or exploitation of new opportunities; and

- reviewing, at regular intervals, the agricultural research institutions of the NARS with regard to quality, relevance and impact of their outputs.

3.5 Sustainable funding mechanisms

Policy statement: *A funding mechanism shall be put in place to harness resources from both the public and private sectors for agricultural research.*

One of the key constraints to the successful implementation of agricultural research programmes is inadequate funding, and its ad hoc nature. For years to come, funding will be dominated by the public sector. Currently, the donor community finances about 75% of agricultural research, with the balance emanating from the government. A deliberate effort will be made to promote the contribution of the private sector to the funding of agricultural research of public goods' nature.

In order to ensure sustainability and effectiveness of funding for agricultural research, the following strategies will be implemented:

- separating the functions of financing (allocating resources) from the functions of implementing research activities;
- increasing government funding to agricultural research by raising the share of research funds from the current 0.6% to at least 2% of the agricultural GDP by the end of the tenth year of implementing the new reforms;
- creating opportunities and incentives for increased investment of the private sector and civil society into research, and in particular to contributing towards funding research of public goods' nature;
- establishing an agricultural research *"Basket Funding"* mechanism, to which development partners would be encouraged to contribute. This fund will provide grants, which will be competed for by researchers in the public, and private sectors in a transparent and accountable manner, based on identified national priorities. The research providers will then be contracted to implement these research activities;
- establishing a Research Trust Fund;
- exploring and implementing all practical forms that may sustainably generate resources for supporting the agricultural research system; and
- providing funds to the public research institutes to cater for their maintenance, staff salaries, wages, infrastructure and supporting research of national strategic interest.

The public research institutes will explore avenues for other sources of revenue to supplement government funding. These may include, but not limited to:

a) generating funds from institute facilities that are not optimally utilised, such as excess land and buildings through lease arrangements;

b) selling the products of research such as foundation seed and planting and stocking materials; and

c) selling services including professional skills and laboratory services.

3.6 Human resource management and development

> ***Policy statement:*** *Human resources for agricultural research shall be managed and developed to ensure efficient and effective delivery of services.*

Implementation of high quality, effective, efficient and sustainable research services requires that the implementing institutions/institutes have a critical mass

of human resources matching present and future demands in terms of numbers, knowledge, skills and experience, as well as their strategic deployment. Many of these people are highly marketable. To retain them and minimise the rate of turnover in public institutes, they need to be motivated and well remunerated.

The following strategies will be implemented to address the aspects of human resource management and development:

- carrying out training needs assessments of the staff of public and private institutes so as to formulate comprehensive training plans and programmes including advancement of scientific knowledge, socio-economic research and participatory methods in problem identification;
- facilitating interaction between the training institutions and research service providers, through which the training institutions can get ideas regarding future human resource requirements;
- encouraging training institutions to conduct sandwich courses, in which students spend some time in practical research within a research service provider enterprise;
- providing competitive terms and conditions of service commensurate with the demands and skills demanded of research service providers;
- developing cost-sharing, re-orientation and continuous self-improvement programmes for the existing research scientists, including those in the private sector; and

- pursuing re-entry plans for returning scholars and recipients of training programs.

3.7 Infrastructure for agricultural research

Policy statement: *Appropriate infrastructure will be put in place at the national, agro-ecological and, where necessary, district levels to facilitate efficient and effective delivery of agricultural research services.*

The conduct of efficient and effective agricultural research relies, among other factors, on the proximity and the availability of an appropriate infrastructure for research service delivery. The availability of research infrastructure will be ensured by:

- rationalizing the number and size existing public research facilities to ensure equity, excellence and geographical balance;
- investing in upgrading the capabilities of equipment and facilities of strategic research to raise the quality of infrastructure to reasonable and practical levels; and
- intensifying the use of latest developments in research approaches and information communication technologies.

3.8 Institutional framework for NARS

Policy statement: *The NARS institutional framework shall encompass public as well as private sector bodies in implementing agricultural research, and shall promote vertical and horizontal linkages with other national, regional and international agencies.*

A clear institutional framework, including the roles of stakeholders involved, is a pre-requisite for the successful implementation of research programmes and activities. The fundamental aim of the reforms introduced under the policy is to improve the performance of the research system. This will be achieved through innovative arrangements for the management and delivery of research services. Pluralism, partnership, collaboration and competition will foster quality and efficiency among service providers. The policy shall recognise the management and conduct of research as two separate services requiring distinct skills, experience and facilities that may be provided by one or a consortium of agricultural research service providers.

The policy shall support and promote the establishment of research teams and networks, at various levels (national, zonal, district) composed of the best

available scientists and other experts on any particular theme being supported. The following are the key institutions that will be involved in the NARS.

3.8.1 Public Institutions

3.8.1.1 Ministry of Agriculture, Animal industry and Fisheries

MAAIF is mandated, among other things, to formulate and/or review all policies in the agricultural sector. Regarding agricultural research, MAAIF's roles will include the following:

- formulating and reviewing agricultural research policy;
- overseeing the implementation of the Agricultural Research Policy;
- initiating review and enactment of legislation for the NARS;
- formulating and/or reviewing regulations and standards that will govern the conduct of agricultural research in the country;
- integrating research plans and programmes into the national programmes in the agricultural sector;
- advocacy and soliciting funds for agricultural research; and
- monitoring, supervising and evaluating the activities of NARS to ensure that they are in conformity with other national policies;

Some of these functions may be delegated to the Apex body for coordinating agricultural research in Uganda, once established.

3.8.1.2 Uganda National Council of Science and Technology

The overall responsibility for co-ordination and policy guidance at national level on all issues pertaining to science and technology, including research and development, is vested in UNCST, a body corporate in the Ministry of Finance, Planning and Economic Development. According to the UNCST policy, the formulation and implementation of sector policies is the responsibility of line ministries/institutions. In accordance with the Science and technology policy, the functions of the UNCST are to:

- advise on and coordinate the formulation of an explicit national policy in all fields of science and technology, including agricultural research policy; and
- assist in the promotion and development of indigenous science and technology.

3.8.1.3 The National Agricultural Research Organisation

An apex body called the National Agricultural Research Organisation will be established as a body corporate under MAAIF to take charge of all matters concerning agricultural research in Uganda. The NARO shall operate in collaboration with UNCST and shall in relation with UNCST be responsible for coordinating the implementation of the National Agricultural Research Policy in the agricultural sector of Uganda. Its key functions will be:

- co-ordinating the planning, harmonisation and implementation of programmes and research activities of NARS' constituent institutions and institutes in the public as well as the private sector;
- advocacy and soliciting funds for agricultural research;
- managing the Research Trust Fund and National Competitive Agricultural Technology Fund for strategic research programmes;
- contracting agricultural research service providers at the national level;
- setting standards, regulations and guidelines for conducting agriculture research;
- quality assurance for agricultural research service providers;
- technical guidance to local governments in collaboration with other relevant agencies and institutions;
- monitoring the human resources pool (quality and quantity) for agricultural research and providing for its continuous development to address critical skills gaps;
- monitoring and evaluating all agricultural research programmes;
- collecting, collating and analysing agricultural research data and information and disseminating it to end- users;
- maintaining the national agricultural knowledge base for ensuring the institutional memory of the NARS; and
- collaborating and linking with other agricultural research systems, regionally and internationally.

3.8.1.4 Public agricultural research institutes

The policy will promote continued existence of core public research capacity so as to ensure that there are no gaps in addressing the national strategic research interests, and for protecting the national public knowledge base. This core capacity will be supported through core block grant budgetary allocations to provide continuity to these activities.

The public agricultural research institutes will be rationalised to ensure cost-effectiveness and efficiency in delivering research service. They will be of two categories:

i) National Agricultural Research Institutes with mandates for specified programmes/research themes,
ii) Zonal Agricultural Research Institutes with location-specific mandates based on the agro-ecological conditions.

These institutes will be co-ordinated to achieve synergy on matters relating to management, acquisition and use of funds and facilities for conducting agricultural research, while at the same time ensuring uniformity of procedures and guidelines for undertaking core responsibilities and accountability to government and stakeholders. Their main roles and functions will be:

- providing services as managers of research at any level;
- conducting basic and strategic research of national interest as individual institutes or as members of the inter-disciplinary research teams and networks;
- conducting demand-driven research using the competitive grants as well as contracts from the local governments and the private sector, either as individual institutes or as members of the inter-disciplinary research teams and networks;
- acting as centres of excellence and reference on specific research programmes/enterprises;
- conducting tailored training programmes for clients;
- multiplying technologies, foundation seed and stocking materials for supply to stakeholders;
- technical back-stopping to advisory service providers;
- receiving and managing block grants for core activities; and
- membership on NARO committees.

3.8.1.5 Universities and agricultural colleges

The universities and agricultural colleges are some of the key components of NARS. Their role and functions will be:

- training the personnel who will act as agricultural research service providers (technicians, junior research scientists and senior scientists);
- acting as centres of excellence, especially for basic scientific research.
- providing services as managers of research at any level;

- conducting strategic research on contract from the NARO and the private sector either as individual institutions or as members of the inter-disciplinary research teams and networks;
- undertaking adaptive research on a competitive basis, funded by NARO, local governments, civil society and the private sector; and
- membership on NARO committees.

3.8.1.6 Other Public Institutions

Several Ministries and/or public institutions will play supportive/collaborative roles during the implementation of the policy, as and when the need arises. They include, but are not limited to, the following:

(i) Ministry of Finance, Planning and Economic Development for provision of funds and guidance in planning in collaboration with the National Planning Authority.

(ii) Uganda National Bureau of Standards for quality assurance and standards of agricultural research service providers and agricultural products.

(iii) National Environment Management Authority for guidance on sustainable natural resource management and environmental issues, as well as environmental impact assessment studies regarding new agricultural technologies.

(iv) Uganda Bureau of Statistics for guidance on agricultural statistics and information gathering.

(v) Ministry of Water, Lands and Environment for collaborative research on natural resource management and water for agricultural production.

(vi) Ministry of Tourism, Trade, and Industry for collaborative research in game ranching, plant and animal diseases/pests and market research.

(vii) Ministry of Health for collaborative research on diseases and vectors that affect human beings and animals.

(viii) Uganda Coffee Development Authority.

(ix) Cotton Development Organisation.

(x) The National Agricultural Advisory Services.

(xi) The National Animal Genetic Resources Centre and Databank.

(xii) The Uganda Industrial Research Institute.

(xiii) National Planning Authority.

(xiv) Dairy Development Authority.

(xv) National Forestry Authority.

(xvi) Economic Policy Research Centre.

(xvii) Uganda Investment Authority.

(xviii) Any other public institution existing or established whose work is deemed pertinent and complementary to the conduct of agricultural research.

3.8.2 Private Sector

In conformity with the overall government policies and strategies, the National Agricultural Research Policy recognises private sector agencies as significant partners in the NARS. The NARS is designed to encourage and facilitate their participation in the articulation of demand and supply of agricultural research services and in mobilisation and provision of funds, personnel and facilities for agricultural research. The NARO will also contract the private sector to provide a variety of research services, including:

- providing services as managers of research at any level;
- conducting research through contracts from the NARO (using competitive research grants) or local governments;
- conducting technology demonstrations and multiplication;
- conducting studies on various topics, such as socio-economic constraints to production, processing and marketing;
- offering consultancy services to NARO, Public Agricultural Research Institutes and local governments;
- participating in monitoring and evaluating agricultural research programmes;
- financing agricultural research; and
- investing in developing infrastructure for agricultural research.

3.8.3 Farmers' Fora, Civil Society and Professional Associations

The procurement, monitoring and evaluation of agricultural research services at the lower levels will be implemented through farmers' institutions. The NARO, together with NAADS, will facilitate the formation of new or consolidation of existing farmers' groups for farmers with similar interests and enterprises at village/parish level. Within NARS, the role of farmers' groups (including farmers fora established under NAADS) commodity specific organisations, umbrella

farmers organisations, civil society organisations with interests in agriculture, will be to:

- identify and prioritise problems affecting their farming systems and commodities/enterprises during production, processing and marketing;
- award contracts to agricultural research service provider;
- participate in adaptive research, technology demonstrations and multiplication;
- cost-share in the delivery of research services by providing facilities and labour;
- participate in monitoring and evaluation of the activities of agricultural research service providers contracted on their behalf by local governments and farmers fora;
- lobby and advocate for increased support for agricultural research (funds, favourable policies, markets);
- mobilise and build capacity for farmers and service providers to effectively participate in agricultural research.; and
- provide guidance on attainment of high levels of professional competence and observing ethical standards.

3.8.4 Local governments

One of the cardinal principles of this policy is decentralisation of the demand, supply and funding of agricultural research services. Local governments will, therefore, be at the forefront in articulating the demand for and generating and disseminating technologies in conformity with the Local Governments Act (1997). This will be achieved by carrying out the following key roles:

- mobilising farmers to form groups and for a;
- co-ordinating the delivery of agricultural research services with other related services at all levels of local government;
- supervising, monitoring and evaluating the activities of agricultural research service providers;
- providing and managing agricultural research funds; and
- integrating agricultural research plans into the overall sub-county and District development plans.

4.0 FUNDING MECHANISMS FOR IMPLEMENTATION OF THE POLICY

The NARS shall be supported through basket funding. Government (both national and local), Development Partners, Farmers, Private Sector, Civil Society shall all subscribe to a Research Trust Fund from which Competitive Agricultural Technology Funds (CATFs) will be established for the conduct and delivery of research programs at the national, district and sub-county levels. The CATFs shall be supported with allocation from the central vote for research to the National Agricultural Research Organisation (NARO). There will be at least five (5) types of fund allocations. In order to guarantee stable funding for agricultural research, an Endowment Fund shall be created, from which annual contributions shall be made to the different operational funds described below:

4.1 Apex body allocation

This allocation is purposely to cater for the running costs and operations of the NARO. This allocation shall be used to pay the contract fees of the professional management staff, the allowances of the Council Members as well as meeting the running costs of the Secretariat. Another portion of this allocation shall be based on planned outputs of the management team such as organizing of planning and prioritization workshops, capacity building sessions, and conducting monitoring and evaluation exercises. The operations of the entire NARO must be results-oriented so as to account for the use of these funds.

4.2 Block grant allocation to Public Agricultural Research Institutes

This allocation shall be a Factor-Based Block Grant Allocation for the public research institutes. This portion of the fund is necessary to support the existence of the public agricultural research institutes because they exist in the national interest. The amount for each PARI shall be negotiated through the NARO and will be based on the cost of undertaking the delegated core functions, types pf programs and outputs desired. It shall cover the salary payments of core staff, with most professional researchers in these institutes paid from fees charged on research contracts.

4.3 National competitive agricultural technology fund

This allocation is dedicated to research in areas where government deems them to be in the strategic interest of the nation and general public. The tendering process for these programs could be based on limited bidding by only public agricultural research institutes or offered to them based on strategic collaboration

arrangements either between some of them or shared by all the institutes. The type of bidding or award should depend on the nature of the program. The allocation is managed by the NARO at the national level and where necessary, the government may wish to involve private sector providers.

4.4 Local competitive agricultural technology fund

In order to enhance the empowerment of end-users (farmers) through decentralization, a direct allocation of research financial resources shall be made to the Local Government level such as Districts and Sub-Counties, largely through the NAADS Technology Funds. These funds are managed at the local level to ensure the local acquisition of the preferred providers as well as to facilitate accountability at that level. The programs funded by these resources shall be competitively awarded to the research providers, whether public or private, whom the farmers think are most competent to deliver the right results.

4.5 Change and innovation fund

In order to enhance the creativity and innovativeness of researchers, a direct allocation of research financial resources is expected to be made to individual or group grantees to conduct research that may not be considered immediately relevant but which may open up opportunities for the future. These funds shall be managed at the national level. The programs funded by these resources shall be competitively awarded to the agricultural research service providers, public or private, whom the scientific community think are most competent and innovative.

5.0 LEGAL FRAMEWORK FOR IMPLEMENTATION OF THE POLICY

5.1 The National Agricultural Research Act

For purposes of implementing the National Agricultural Research Policy, a National Agricultural Research Act will be enacted. The Act will provide for the establishment of the National Agricultural Research Organisation (NARO) as a body corporate to serve as the apex body for guidance and co-ordination of all agricultural research activities in the NARS. The Act will spell out the powers, functions and administration of the NARO, for the improvement of agricultural research management, and for the funding of agricultural research. It will also provide for the establishment of Public Agricultural Research Institutes (PARIs) and other related and incidental matters.

5.2 Other related legislations

The enactment of the National Agricultural Research Act will cause repeal of the NARO Statute of 1992 and may necessitate amendment of other related legislations.