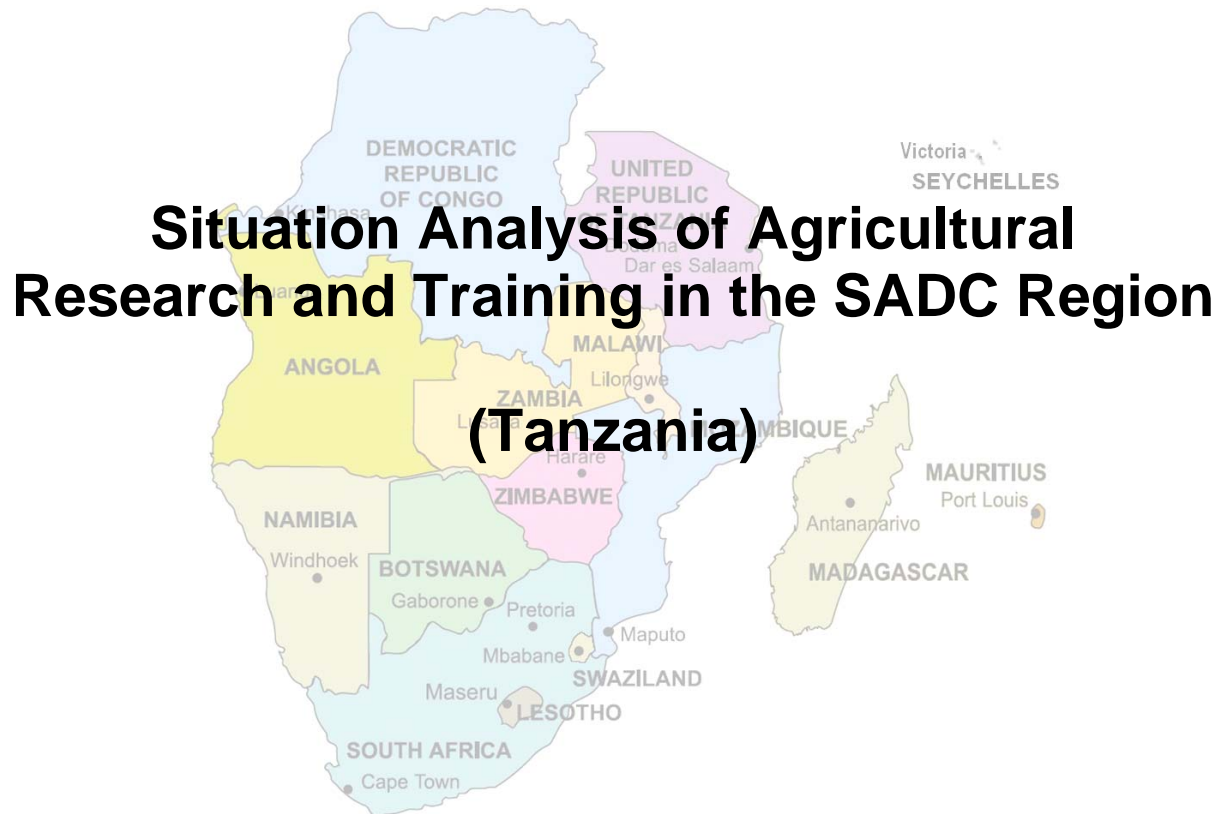




# IMPLEMENTATION AND COORDINATION OF AGRICULTURAL RESEARCH AND TRAINING (ICART) IN THE SADC REGION



***FANR Directorate  
SADC Secretariat  
July 2008***

*“The authors accept sole responsibility for this report drawn up on behalf of the Regional Authorising Officer of SADC Secretariat. The report does not necessarily reflect the views of the SADC Secretariat, nor of the European Commission”*

**SADC IMPLEMENTATION AND COORDINATION OF  
AGRICULTURAL RESEARCH AND TRAINING (ICART)**

**SITUATION ANALYSIS OF AGRICULTURAL RESEARCH  
AND TRAINING IN THE UNITED REPUBLIC OF  
TANZANIA**

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**February, 2008.**

The author accepts sole responsibility for this report drawn up on behalf of the Regional Authorising Officer of SADC Secretariat. The report does not necessarily reflect the views of the SADC Secretariat, nor of the European Commission.

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## Abbreviation and Acronyms

ALP	Agricultural and Livestock Policy
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa
ASDS	Agricultural Sector Development Strategy
ASDP	Agricultural Sector Development Programme
CAMARTEC	Centre for Agricultural Mechanization and Rural Technology
CBD	Convention for Biological Diversity
CBO	Community Based Organizations
CIAT	Centro Internacional de Agricultural Trigo
CIP	International Potato Centre
CORMA	Client Oriented Research Management Approach
COSTECH	Tanzania Commission for Science and Technology
CSO	Civil Society Organization
CSP	Corporate Strategic Plan
CYMMIT	Centro Internacional de Mejoramiento de Maiz y Trigo
DADP	District Agricultural Development Programme
DCD	Directorate of Crop Development
DRPGS	Directorate of Research and Postgraduate Studies
DRT	Department of Research and Training
DRT	Directorate of Research and Training
DRTE	Department of Research Training and Extension
ECARRN	Eastern and Central African Rice Research Network
ELCT	Evangelical Lutheran Church of Tanzania
ESRF	Eastern and Southern Africa Research Foundation
FANR	Food Agriculture and Natural Resources Directorate
FSR/E/T	Farming systems Research, Extension and Training
GoT	Government of Tanzania
ha	Hactare
HEAC	Higher Education Accreditation Council
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
HORTI	Horticultural Training Institute
ICART	Implementation and Coordination of Agricultural Research and Training
ICRAF	International Centre for Research in Agro Forestry
ICRISAT	International Centre for Research In Semi Arid Tropics
IDRC	International Development Research Centre
IITA	International Institute of Tropical Agriculture
IP	Intellectual Property
IPR	Intellectual property Rights
IUCEA	Inter University Council for East Africa
KATC	Kilimanjaro Agricultural Training Centre

LGA	Local Government Authority
LITI	Livestock Training Institute
MATI	Ministry of Agriculture Training Institute
MDG	Millenium Development Goals
MH	Ministry of Health
MITM	Ministry of Industries, Trade and Marketing
MLD	Ministry of Livestock Development
MNRT	Ministry of Natural Recourses and Tourism
MVIWATA	Mtandao wa Vikundi vya Wakulima Tanzania (Tanzania Farmer Groups Network)
MW	Ministry of Water
NALEPIG	National Agriculture and Livestock Extension Policy and Implementation Guidelines
NARS	National Agricultural Research System
NGO	Non Governmental organization
NORAD	International Agency for Development Cooperation
NSGRP	National Strategy for Growth and Reduction of Poverty
PBFP	Property and Business Formalization Program (Mkakati wa (MKURABITA)
PELUM	Participatory Ecological land Use management
PLHA	People Living with HIV and AIDS
PLHAs,	People Living with HIV and AIDS
PMO	Prime Ministers' Office
R & T	Research and Training
R&D	Research and Development
R&D ACAL	Research and Development Advisory Committee on Agriculture and Livestock
REPOA	Research for Poverty Alleviation
SADC	Southern African Development Community
SME	Small and Medium Enterprise
SUA	Sokoine University of Agriculture
SUACSP	Sokoine University of Agriculture Corporate Strategic Plan
TaCRI	Tanzania Coffee Research Institute
TAFORI	Tanzania Forestry Research Institute
TARP II	Tanzania Agricultural Research Project phase II
TAWIRI	Tanzania Wildlife Research Institute
TORITA	Tobacco Research Institute of Tanzania
TPRI	Tropical Pesticides Research Institute
TRIPS	Trade-Related Aspects of Intellectual Property Rights
TRIT	Tea Research Institute of Tanzania
TTO	Technology Transfer Office
UDSM	University of Dar es Salaam
USAID	United States Agency for International Development
WARDA	West African Rice Development Association
ZAREDF	Zonal Agriculture Research and Extension Development Fund

ZRTC  
ZTC

Zonal Research Technical Committee  
Zonal Technical Committee

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## **Executive Summary**

### **1.0 Agriculture in Tanzania**

Tanzania has a land area of 94.5 million ha of which 44 million ha is arable or suitable for agriculture. However, it is currently estimated that only about 10 million ha or 23% of the arable land is under cultivation and food crops occupy about 85 of the arable land. The economy of the United Republic of Tanzania is highly dependent on agriculture which provides the source of livelihood for over 80 % of the population and women constitute the main part of the agricultural labour force. The dominant group in Tanzania agriculture are small-holder subsistence farmers who utilize about 85% of the land cultivating not more than 2.0 ha. The agricultural sector constitutes nearly half of the value of the national income (GDP) and about three quarters of the national export revenue.

### **1.2 Rationale and methodology of the study**

The SADC Secretariat has embarked on a process to strengthen capacity and improve communication management of agricultural information among SADC member states. Through the ICART project under FANR, SADC is implementing a four-phase Situation Analysis study in order to identify, appraise and assess constraints, and recommend support strategies for existing national Agricultural Research Systems (NARS) and for research networks servicing agricultural production and rural development in the SADC region. In the context of ICART, agriculture is defined broadly to include crop production, animal husbandry, gathering of biological products, sustainable exploitation of natural resources used in agriculture and their impact on the environment, agricultural economics and policy formulation, rural livelihoods and the social issues of farming that affect farmers, herders and gatherers, including forestry.

This study is the third phase of a programmed approach to undertaking a situation analysis of agricultural research and training in the SADC. This report contains findings of a Situation Analysis study of agricultural research and training in Tanzania. The objectives of the Situation analysis is to establish the following:

- Status of the NARS
- Status of national and regional agricultural research and training networks.

The essence of the study was to establish the agricultural research and training situation along the following three themes:

1. Framework and coordination of the NARS
2. Management of research and training programmes
3. Networking for agricultural training, research and development

Information and/or data for this study was achieved through the following means:

- Review of electronic and other documents from the SADC MAPP and other studies in the region

- Internet search of websites
- Discussions with relevant stakeholders
- Review of publications
- Consultation using telephone

A draft report containing information on Theme 1 was made available to key national stakeholders who later participated in a 2-day workshop to validate findings contained in the draft report and generate the information required in themes 2 and 3. Contributions from the workshop were incorporated into the final report

### **1.3 The NARS**

In Tanzania, the NARS is comprised of a network of public, parastatal and private research and institutions which hand in hand with local government authorities and civic organizations. The lead institutions are the Department of Research and Training (DRT) of the Ministry of Agriculture Food Security and Cooperatives (MAFC) and the Department of Research Training and Extension (DRTE) of the Ministry of Livestock Development (MLD). Other institutions include two semiautonomous institutions, the Tropical Pesticides Research Institute (TPRI) under MAFC and the Centre for Agricultural Mechanization and Rural Technology (CAMARTEC) under the Ministry of Industries Trade and Marketing (MITM). Among institutions of higher learning, Sokoine University of Agriculture (SUA) is a major component but the University of Dar es Salaam (UDSM), Moshi University College of Cooperative and Business Studies (MUCCOBS), college of SUA, Mzumbe University, the Open University of Tanzania (OUT), and the Institute of Rural Development Planning (IRDP), are also involved in some aspects of agricultural research and training.

Private research organizations include the Tea Research Institute of Tanzania (TRIT), Tanzania Coffee Research Institute (TaCRI), and Tobacco Research Institute of Tanzania (TORITA), which are briefly presented in this document. There are many NGOs and CSOs registered in Tanzania which also engage in agricultural research and training in partnership with the public and private institutions indicated above.

### **1.4 Institutional Framework and Coordination of the NARS**

Agriculture, like any other sector in the economy is guided by strategies of national significance. These include Tanzania Development Vision 2025, National Strategy for Growth and Reduction of Poverty or 'MKUKUTA' of 2005, the Property and Business Formalization Program (PBFP or 'MKURABITA' (2005-2010) at national level and the 'MKUZA' for Zanzibar, and the Agricultural Sector Development Strategy (2001). These strategies are briefly described and the relevant documents presented in full as annexes.

The agriculture sector is guided by the Agriculture Sector Development Strategy (ASDS) which was adopted in 2001. In the ASDS, the designated agriculture-sector lead ministries are: The MAFC, MLD, Ministry of Trade, Industries and Marketing (MTIM), and the Ministry of Regional Administration and Local Government in the Prime Ministers' Office (PMO-RALG). The Ministry of Higher Education Science and Technology (MHEST) which is responsible for university and similar high level training is not among the lead Ministries.

Agriculture research and training takes place within the context of various policies within the lead Ministries and other Ministries which have a bearing on agriculture. These policies are briefly discussed and include the following:

- Agricultural and Livestock Policy (1997)
- National Agriculture and Livestock Extension Policy and Implementation Guidelines - NALPIG (1995)
- Cooperative Development Policy (1997)
- National Livestock Policy (2006)
- National Forest Policy (1998)
- The Beekeeping Policy (1998)
- National Water Policy (2002)
- The SME Policy (2002)
- The National Land Policy (1997)
- National Higher Education Policy (1999)
- National Science and Technology Policy (1995)
- Policy on Women in Development in Tanzania (1992)
- National Information and Communications Technologies Policy (2003)
- National Policy on HIV/AIDS (2001)

### **1.5 Methodology for research and Coordination of the NARS**

The MAFC and MLD components of the NARS is divided into seven zones based on similarity in agro-ecology. Research problem identification is achieved following value chain approach with stakeholders participation. Priority setting is done in collaboration with stakeholders to identify areas of research and the entire process is spearheaded by the ZSC and ZARDEF technical committee, both of which have at least 50% of members who are farmers the others being from NGOs, and the private and public sectors.

Budget allocation by government to research is far below the 10% of GDP agreed upon by SADC member states. However, agricultural research in Tanzania is largely funded by loans from financial institutions such as the World Bank, the African Development Bank and other international donors. For the MAFC and MLD components, coordination is achieved first through the ZRTC, and nationally, the DRT and DRTE, respectively. The ZRTC draws members from farmers, traders, policy makers and researchers. On the other hand, the Board of Directors which oversee research and extension activities in private research institutions, NGOs and CBOs have, as members, representatives of MAFC, together with other stakeholders

from the farming community, traders and other investors. Across Ministries and institutions, coordination of the NARS is loosely facilitated through the Tanzania Commission for Science and Technology (COSTECH), under the R&D Advisory Committee on Agriculture and Livestock (R&D ACAL)). The R&D ACAL draws members from the DRT, DRTE, private sector, NGOs and universities.

### **1.6 High level training**

Institutions of training programmes that eventually produce personnel for agricultural research are managed under MHEST. SUA is a key partner of NARS for the training component. The bulk of the researchers are trained at SUA for their bachelor degrees but other institutions such as UDSM, MUCCOBS and MU also offer relevant training programmes to some extent. Relevant degree training programmes for SUA, MUCCOBS and UDSM are indicated.

### **1.7 Collaboration and research alliances**

Research and training institutions have a long history of collaboration and interdependency in Tanzania. The potential demand for cooperative relationships is high. On going collaboration is in collaborative research, joint training, joint supervision of students' practical training and/or research, short term lecturing positions and joint publications. Research alliances are viewed as a cost effective way of accessing utilizing research funds as the outputs can have wider implications within a country and across countries. There have been many research alliances in the past on the basis of specific commodity programmes (eg maize programme) or programmes addressing a specific agro-ecological zone (eg rainwater harvesting in arid areas).

It is also planned that training of stakeholders under the Client Oriented Research/Extension Management Approach (CORDEMA) will involve the private sector (e.g. MVIWATA, PELUM), Universities and research departments in the private sector

### **1.8 Networks**

Networking and creating alliances is provided for in the functions of the DRT and the DRTE and the same applies to universities, private research institutes, NGOs, CBOs and LGAs. Examples of international networks currently collaborating with institutions of the Tanzania NARS include CYMMIT, ICRISAT, IITA, CIP, CIAT, WARDA, ICRAF The need for research networks serving SADC lies in regional research programmes for capacity building and training involving sharing of expertise, infrastructure, programmes to build capacity and enhance efficiency, joint publication and ownership (Intellectual Property) of innovations. However, some level of harmonization of operational procedures within the different countries may have to be reached before any meaningful collaboration can be achieved.

## **1.0 INTRODUCTION AND BACKGROUND**

### **1.1 Introduction to the Study**

The programme Implementation and Coordination of Agricultural Research and Training (ICART) in the Southern African Development Community (SADC) is a regional agricultural research and training programme operating under the auspices of the Food, Agriculture and Natural Resources (FANR) Directorate of the SADC Secretariat, responsible for the coordination of the agricultural research and training programs. The overall objective of ICART is to contribute to regional economic growth and poverty alleviation by organizing, within the SADC region, innovative agricultural research and training activities to promote sustainable use of natural resources. In the context of ICART, agriculture is defined broadly to include crop production, animal husbandry, gathering of biological products, sustainable exploitation of natural resources used in agriculture and their impact on the environment, agricultural economics and policy formulation, rural livelihoods and the social issues of farming that affect farmers, herders and gatherers.

The FANR Research and Development Unit relies on information about activities in the agricultural sector and active participation of all major stakeholders in the sector. However, information on the sector is generally fragmented. The lack of a comprehensive agricultural sector information on the region has made it difficult for SADC to meaningfully plan and implement agricultural development projects for the region. The SADC Secretariat has embarked on a process to strengthen capacity and improve communication management of agricultural information among SADC member states. Hence the FANR has started, through the ICART project, to implement a four-phase Situation Analysis study in order to identify, appraise and assess constraints, and recommend support strategies for existing national Agricultural Research Systems (NARS) and for research networks servicing agricultural production and rural development in the SADC region. Where NARS do not exist, make recommendations to promote the concept, and formally establish them.

This is the third phase of a programmed approach to undertaking a situation analysis of agricultural research and training in the SADC. The study is being undertaken in Tanzania which is one of the 14 member states of SADC to establish the following:

- i. Framework and coordination of the NARS
- ii. Management of research and training programmes
- iii. Networking for agricultural training, research and development

### **1.2 Background Information on Agriculture in Tanzania**

Tanzania has a land area of 94.5 million ha of which 44 million ha is arable or suitable for agriculture. However, it is currently estimated that only about 10 million ha or 23% of the arable land is under cultivation and food crops occupy

about 85 of the arable land. On the other hand, out of the estimated 50 million ha suitable for livestock production, only about 50% of the land is currently used, the rest been unsuitably mainly due to tse-tse infestation. Hence, a large proportion of the land resources remains untapped.

Tanzania's agriculture is dominated by small-holder subsistence farmers who utilize about 85% of the land cultivating not more than 2.0 ha using the hand hoe as the dominant tool among the small holders. About 70 percent of Tanzania's crop area is cultivated by hand hoe, 20 percent by ox plough and 10 percent by tractor. It is predominantly rainfed agriculture. To a large extent the sector is characterized by traditional production systems which rely on indigenous varieties and breeds and whose overall productivity is generally low. According to the National Sample Census of Agriculture 2002/2003 only a small number of households use purchased inputs such as improved seed, pesticides inorganic fertilizers, fungicides and herbicides and farmyard manure is the single most widely used input even though the proportion of households having access to this input is also low estimated to be only 26% (Table 1).

**Table 1: Use of Inputs in Mainland Tanzania**

Type of Input	Households with Access to Inputs		Households without Access to Inputs	
	Number	%	Number	%
Farm yard manure	1,253,312	26	3,507,277	74
Improved seed	877,308	18	3,885,281	82
Fungicides	794,372	17	3,968,911	83
Inorganic Fertilizers	552,953	12	4,209,636	88
Compost	281,678	6	4,480,911	94
Herbicides	76,202	2	4,686,388	98

Source: Tanzania Agriculture Sample Census 2003 (Vol. II Crop Sector)

Important technical considerations to achieving better profitability and sustainability include improved management of agricultural resources, efficiency in managing inputs and outputs, adoption of new technologies and increased use of existing technologies on improved land husbandry practices, soil and water conservation including water harvesting and irrigation, range management, crop protection, animal health and post-harvest handling and value addition technologies. Given the abundant available land, there is huge potential for increasing the area being utilized for agriculture, productivity and profitability through dissemination of viable farm production technologies that permit increased use of land by smallholder farmers and livestock keepers as a matter of priority so as to revolutionize the current situation and eventually commercialize agriculture.

Equally important is the need to increase farm profitability of competitive agricultural marketing systems that can facilitate the development of proper and efficient input supply, processing and produce marketing. In order to address the

above concerns, the Government of Tanzania formulated the Agricultural Sector Development Strategy (ASDS) in 2001 to guide the implementation of the necessary institutional, legal, administrative, and policy changes and at the same time long term investments in the transformation of the agricultural sector in order to improve agricultural productivity and profitability. The ASDS, which is being implemented through the Agricultural Sector Development programs (ASDP) focuses on commercializing agriculture through private-public partnership and district-based investment through the District Agricultural Development programmes (DADPs). The programme also places emphasis on dissemination of viable farm production technologies that permit increased use of land by smallholder farmers and livestock keepers, as a matter of priority, to revolutionize and commercialize agriculture for improved productivity and profitability.

### **1.3 Economic and Social Context**

The economy of the United Republic of Tanzania is highly dependent on agriculture which provides the source of livelihood for over 80 % of the population and women constitute the main part of the agricultural labour force. The agricultural sector constitutes nearly half of the value of the national income (GDP) and about three quarters of the national export revenue. The economy has achieved steady growth since 2000 averaging 6% for the period 2000-2006 (Economic Survey, 2006.) However, agricultural GDP has grown at an average 3.3 percent per year since 1985, the main food crops at 3.5 percent and export crops at 5.4 percent per year. Considering that the overall GDP growth target for halving abject poverty by 2010 is in the range of 6-7 percent, this performance falls short of the needed growth.

According to the Household Budget Survey of 2000/01, 87% of the 11 million people (about one third of the population) living below the poverty line are in the rural areas. The main factors attributing to increased poverty are low productivity, frequent droughts and limited access to farm inputs and markets, implying that generally agriculture has not benefited the large population in the sector. The major constraint facing the agriculture sector is the falling labour and land productivity due to application of poor technology, dependence on unreliable and irregular weather conditions. Both crops and livestock are adversely affected by periodical droughts. Irrigation holds the key to stabilizing agricultural production in Tanzania in order to improve food security, increase farmers' productivity and incomes, and also to produce higher valued crops such as vegetables.

The macro economic reforms first initiated in mid-1980s have had, and continue to, impact on the Agriculture sector. The economic reforms have lead to the development and/or improvement of various sector policies, opening the sector to private investment in research, production and processing, input importation and distribution and agricultural marketing. On the other hand, the government has continued to perform regulatory and public support functions or facilitation role.

## 1.4 Importance of agriculture in Tanzania

Agriculture is the foundation of the Tanzanian economy. It accounts for about half of the national income, three quarters of merchandise exports and is source of food and provides employment opportunities to about 80 percent of Tanzanians, mostly residing in the rural areas. Food crop production dominates the agricultural economy contributing about 36.5% of total GDP, and livestock accounting for 6.1%. Agriculture has linkages with the non-farm sector through forward linkages to agro-processing, consumption and export; provides raw materials to industries and a market for manufactured goods.

Maize is the most important food crop in Tanzania, accounting for over 20 percent of the total agricultural GDP, followed by rice/paddy, beans, cassava, sorghum and wheat. The most important cash crops, ranked by export value, are coffee, cashew, cotton, tobacco and tea. The recent annual average growth rates of export crops, food crops and livestock have been estimated at about 6, 4, and 3 percent respectively. In 2004 the contribution of livestock to GDP was 4.1% and the contribution of livestock to the agriculture sector was estimated to be 8.9 percent. The main types of livestock raised in Tanzania are cattle, goats, sheep, pigs and poultry.

In urban and peri-urban areas urban agriculture is practiced as household – level coping strategies against economic hardships as a result of raising cost of living and/or simply to income. Urban agriculture is practiced in Tanzanian towns and cities and often consists of vegetable gardens and fruit trees and growing of selected field crops, particularly maize. Livestock keeping is also practiced quite widely in urban and peri-urban areas where dairy cattle, goats, layer, broiler and local chicken are raised.

## 1.5 Farming Systems, Agricultural Activities and Livelihood Systems

### 1.5.1 Farming Systems

The farming system zonation (FSZ) is a useful approach for planning; targeting and delivery of agricultural services and improved technologies. It involves identification of all physical characteristics and socio-economic attributes of the area under consideration. The Farming Systems Approach (FSA) enables an integrated approach in agricultural development and hence efficient use of scarce resources and effective delivery of improved services and focus various stakeholders and minimizes duplication of efforts. The following is a summary of the major Farming Systems (FS) in Tanzania.

#### *i) Agropastoral FS*

This is the most extensive, also known as **mixed farming**. It comprises of crops and livestock enterprises at equal importance. This system is practiced in all regions where crops and livestock enterprises are of equal importance, such as parts of Morogoro, Tanga, Coast, Arusha, Kilimanjaro, Manyara, Dodoma, Singida, Shinyanga, Mwanza, and Mara regions.

*ii) Rice-Maize FS*

In the Eastern Zone, this is the second most extensive FS. In this system maize and rice are the major crops. It is found in the Eastern, Southern, Southern Highlands, Lake and to some extent Northern and Central Zones.

*iii) Tree-Crops-Cassava-Maize FS*

The system consists of tree crops-coconuts, cashew, citrus, mangoes, cassava and maize, as major crops. This system is found along the coastal belt of Eastern and Southern Zones of Tanzania.

*iv) Cotton-based FS*

In this system, cotton is widely grown as a cash crop. The system covers some parts of Eastern Zone (Handeni, Morogoro), Central Zone (Singida), Lake and Western Zones

*v) Maize-Beans FS*

In this system, maize and beans are the most important crops. The system can be found in the cooler mountainous parts of the Eastern, Northern, Southern Highlands, Western and Lake Zones

*vi) Maize-Pulses FS*

Maize and pulses, such as cowpeas, pigeon peas and green gram, are the major crops. The system is located in some parts of Tanga and Coast region in the Eastern Zone, Central, Lake, Southern Highlands, Southern, Northern and Western, zones.

*vii) Savannah Pastoralism FS*

In this system, livestock production is the main occupation but extensive and free grazing of livestock, is practiced. The system is found in the Northern and Eastern zones.

*viii) Sorghum-Maize FS*

Sorghum, maize and pulses are the dominant crops in this system. It is found in some parts of Eastern Zone, Central, Lake, Southern, Northern and Western zones.

*ix) Maize-Cassava FS*

In this system, maize and cassava are the dominant crops. It is found in some parts of Eastern and Southern Highlands zones.

*x) Coffee-Banana-Vegetables FS*

Coffee, bananas and vegetables are the dominant crops. The system is found in the highlands of Eastern, Northern, Lake (Kagera Region) and Southern Highlands' zones.

*xi) Sugarcane FS*

The system is characterized by large-scale highly mechanized sugarcane production, in Eastern, (Mtibwa, Kilombero), Northern (TPC) and Lake (Kagera Region), zones. However, in the Eastern Zone outgrowers also grow other crops such as rice maize and bananas

*xii) Sisal FS*

The system is mainly in the Eastern Zone, where large scale sisal is grown, in Tanga (Muheza, Korogwe, Handeni) and Morogoro (Morogoro, Kilosa), Regions. Occasionally when sisal is still young, other crops such as maize, beans and cowpeas are grown as intercrops.

*xiii) Tea FS*

The system is characterized by large scale tea production It is found in the highlands of Eastern (Korogwe, Muheza) and Southern Highlands (Njombe, Mufindi), zones.

*xiv) Ranching FS*

Commercial livestock production is practiced in this system. Beef and dairy cattle are kept. This FS is commonly found in Northern (West Kilimanjaro), Eastern (Ruvu, Mkata) and Southern Highlands (Kifyulilo).

*xv) Peri-urban FS*

This FS is found around the major cities and towns. It is characterized by commercial farming practiced mostly by retired former employees, elite and those with adequate capital. The system occupies peri-urban areas around cities and towns such as Dar es Salaam, Tanga cities, Mwanza, Kibaha and Morogoro.

*xvi) Other Farming systems*

**Forest** and **Game** reserves and **National** parks are the other FS found in all zones of Tanzania. They are important for the economy of the country by contributing through various ways, such as tourism, hunting, timber, non-timber products (eg honey, mushrooms) and provision of social services to villagers around them.

### **1.5.2 Main agricultural activities and livelihood systems**

Agriculture incorporating Crop farming, livestock keeping and pastoralism and fishing are the main livelihood systems in the rural areas of Tanzania. According to the Household Budget Survey (2001/02), to 80 percent of adults in most regions reported agriculture as their main livelihood activity. Most rural households (about 89 percent) reported owning land for agriculture or grazing. The proportion was lower only in Dar es Salaam, Arusha and Mbeya regions where employment and self-employment are more common than elsewhere. The National Sample Census of Agriculture and Livestock (2002/2003) estimated 4,901,837 households are engaged in agriculture and crop farming is more important than livestock keeping. Out of the total, there were about 3,156,060 crops-only households and 1,702,750 households

with both crop and livestock. In addition there were 580 large scale farmers who also kept livestock (Table 2).

**Table 2. Main Agricultural Activities and Households Involved**

Activity	No. of Households	%
Crop Production only	3,156,060	64.40
Crop and Livestock Production	1,702,750	34.73
Livestock Production only	41,199	0.83
Pastoral	1,828	0.04
<b>Total</b>	<b>4,901,837</b>	<b>100.00</b>

Source: Livestock Sample Census 2003

Cereals are the main agricultural crops grown in Tanzania, followed by roots and tubers, pulses and oil seeds. The major groups of crops and areas planted are summarized on Table 3. Maize is the main cereal produced in Tanzania with total production of 2,617,115 tons, representing 74 percent of total cereal production. The area under maize is about 44 percent of the total area planted with crops and 72 percent of the area planted with cereals. Other important cereals are paddy (13%), sorghum (9%), bulrush millet (2%), finger millet (2%) and wheat and barley (<1%). Some of the food crops, including horticultural crops, maize, rice and beans are now emerging as export crops under the category of non traditional export crops. Permanent crop production is dominated by smallholder (1,392,456 ha or 93%) and large scale farms account for only 109,939ha (7%).

**Table 3: Main Crops by type and areas planted**

Crop Type	Area Planted (ha)	% of Total
Cereals	4,798,071	61
Roots and Tubers	1,071,089	14
Pulses	942,053	12
Oil Seeds	534,710	7
Cash Crops	398,456	5
Fruit and vegetables	74,259	1
<b>Total</b>	<b>7,818,638</b>	<b>100</b>

Source: Tanzania Agriculture Sample Census 2003 (Vol. II Crop Sector)

Livestock keeping is the second major agricultural activity in Tanzania. Out of the 4,901,837 smallholder households in the country, 1,745,776 rear livestock and large scale livestock farms (Tanzania Agriculture Sample Census 2003). The major livestock types are Cattle, Goats, Sheep, Pigs and Chickens. Livestock production variations for 2004 and 2005 generally show an increase in livestock populations (Table 4). Smallholder livestock keepers on the mainland are the most important, accounting for about 98.9% while large scale farms account for only 5%. However, this situation is likely to change in the near future as the large scale ranches and dairy, which were previously under government control, are in the process of being subdivided and privatized in line with the government policy of disengagement from production/commercial activities.

**Table 4: Production of Livestock in 2004 and 2005 –numbers ('000)**

Livestock Type	2004	2005	% increase
Cattle	17,100	18,500	9.00
Goats	12,500	13,100	5.00
Pigs	880	1,200	27.00
Traditional Chicken	27,000	30,000	12.00
Sheep	3,500	3,500	0.00

Source: Ministry of Planning Economy and Empowerment – Economic Survey 2005

Fish farming is practiced in only a few places on the mainland. Tilapia is the most common fish farmed (92%), Carp 4% and other species 4%. Only 15,681 (0.3) households practice fish farming producing 2,603,035 fish per year (an average of 166 fish per household (Tanzania Agriculture Sample Census 2003, Vol. III Livestock Sector).

However, the Household Budget Survey (2001/02) results also indicate that households are gradually diversifying their economic activities and there is an increasing tendency to engage in other natural resource-based activities which are totally non-agricultural. Some of the most common activities include the following:

- Charcoal making, collection or gathering of firewood, timber, thatch grasses, medicinal plants, wood carving, weaving, etc using resources from woodlands and forests;
- Small scale mining
- Brick making, brewing of local liquor, retail trading in shops and markets, small scale catering, etc.
- Trade involving marketing of agricultural inputs, farm produce and consumer goods.
- Processing/value addition of farm produce e.g. de-hulling paddy, maize milling, processing of jam and juices from fruits and vegetables, etc
- Service provision e.g. vehicle repair, transportation, food and clothes vending, etc.

## 2.0 METHODOLOGY FOR THE STUDY

The Situation Analysis of Agricultural Research and Training in Tanzania was initiated through a workshop of all the national consultants, national persons and members of the SADC/ICART Steering Committee in November 5-6, 2007 in Johannesburg, South Africa. During the workshop, participants were presented with a brief on the ICART Project and background information for the study. During the workshop, the Terms of Reference (ToR) for the study were discussed (Annex B i and Bii). After deliberations on the ToR, participants agreed to aggregate points of ToR under three main themes namely:

- (i) Framework and coordination of the NARS
- (ii) Management of research and training programmes
- (iii) Networking for agricultural training, research and development

The workshop agreed on the methodology for the study, the report outline and the approach to be taken to collect the required information. The agreed frame of action for the study was as follows:

- Consultant to complete theme i of the study.
- Consultant to submit draft report to national focal point (NFP) and selected national stakeholders for validation
- Hold a two day workshop national workshop to validate information collected on theme i
- At the national workshop, discuss programme approach, discuss the process for theme ii and complete theme iii

Information required was collected by making reference to documents made available to the consultant, in electronic form and hard copies. A key document for the study was the SADC Multi-country Agricultural Productivity Programme (SADC MAPP) Tanzania National Situation Analysis report, ICART 2006 Stakeholders Assembly Participant Report, and ICART Phase I Tanzania report.

## **2.1 Collection of information**

Due to budgetary limitations, consultants were advised to make full use of information available electronically on websites. Hence, information collection was achieved through the following means:

- Review of electronic and other documents from the SADC MAPP and other studies in the region
- Internet search of Ministerial and institutional websites
- Discussions with a few research managers and other stakeholders
- Review of publications
- Consultation using telephone

## **2.2 The National Stakeholders Workshop**

Key national stakeholders was identified and invited, by the NFP, to a 2-day workshop which was held at Morogoro 24-25 January 2008. At the workshop, which was attended by 15 of the 18 persons invited, the NFP presented the background to the study, the study objectives and the ToR given to the consultants. The national consultant made a brief presentation of the draft report on information gathered on theme i. Thereafter, discussed the draft report and made comments on additional information to be gathered under theme i. Participants were then divided into groups to discuss the three themes, and generate the information required in themes ii and iii. The information was made available to the consultant to incorporate in the final draft of the report.

## **2.3 Validation of final draft report**

Consultant, after incorporation of corrections and outputs of the national workshop, circulated the final draft report for final validation. Final comments were made available to the consultant for incorporation into the final report.

### **3.0 FINDINGS OF THE STUDY**

#### **3.1 The Concept of the National Agricultural Research System (NARS)**

A NARS is an organized system mobilizing the contribution of stakeholders in agriculture incorporating research institutions (public, private and professional), universities and professional training institutions, extension organizations, farmers' organizations, private companies and their organizations, Non-Governmental Organisations (NGO) and Civil Society Organisations (CSO).

##### **3.1.1 Public research institutions**

On the basis of the definition above, the Tanzanian National Agricultural Research System (NARS) comprises of a network of institutions lead by the Department of Research and Training (DRT) of the Ministry of Agriculture Food Security and Cooperatives (MAFC) and the Department of Research Training and Extension (DRTE) of the Ministry of Livestock Development (MLD). Functionally, however, the DRT and DRTE together are the largest entity in the NARS and the principal agricultural research agency in the country. In addition to the DRT, within MAFC there is Directorate of Crop Development (DCD) which is responsible for planning and coordination extension though the day-to-day activities of extension workers are administered directly by LGAs. Other institutions include two semiautonomous institutions, the Tropical Pesticides Research Institute (TPRI) under MAFC and the Centre for Agricultural Mechanization and CARMATEC under the Ministry of Industries Trade and Marketing (MITM).

##### **3.1.2 Universities and Professional Training**

Among universities who, in the NARS, are mainly involved in research and training of professionals in agriculture and related fields include a number of institutions under the Ministry of Higher Education Science and Technology (MHEST). These are: Sokoine University of Agriculture (SUA) the University of Dar es Salaam (UDSM), the Open University of Tanzania (OUT), Moshi University College of Cooperative and Business Studies (MUCCOBS), college of SUA, Mzumbe University, Institute of Rural Development Planning (IRDP) and Ardhi University (AU).

##### **3.1.3 Private Institutions, NGOs and CSOs**

Research organizations in this category include the Tea Research Institute of Tanzania (TRIT), Tanzania Coffee Research Institute (TaCRI), and Tobacco Research Institute of Tanzania (TORITA), which are briefly presented in this document. There are many NGOs and CSOs registered in Tanzania and engaged in some aspect of agriculture that it is not possible to list them here. In this document a summary of selected apex organizations which represent the interest of many stakeholders is included.

### **3.1.3.1 Tea Research Institute of Tanzania (TRIT)**

The Tea Research Institute of Tanzania (TRIT) was established in 1996 as an autonomous organisation representing the Government of Tanzania and the tea industry. Since its founding, TRIT has grown incorporating staff from what was then the Ngwazi Tea Research unit, a privately funded organization in the Southern Highlands in 1997 and later through a transfer from the government-owned and managed Marikitanda Tea Research Station in the East Usambara Mountains in the northeast of Tanzania. TRIT supports the continued development of the tea industry, both large and small-scale producers, with appropriate high quality, cost effective research and technology transfer. TRIT aims to support the development of both small and large scale tea producers through appropriate, cost-effective, high quality research and technology transfer, to ensure the sustainability of the Tanzanian tea industry.

The Institute operates in partnership with producers in all the major tea growing areas and manages two research stations, Ngwazi and Marikitanda representing the two major agro-climatic zones where tea is produced. The research programme for TRIT is centred on Crop Improvement, Soil Fertility Management and Crop Water Management Programmes, targeting mostly the southern Highlands of Tanzania but intending to expand, at a later stage, include the north-western parts of Tanzania where tea is also grown. However, the Technology Transfer Programme, which is responsible for farming systems research and extension is already operating throughout the country, particularly for smallholders, operates. Policy guidance for TRIT is provided by a Board of Directors which includes members from the MAFC, processors, producers and other stakeholders.

The research programmes at TRIT are mostly funded by international organizations but its centres host locally registered undergraduate students for field attachment and postgraduate students on research attachment, and also plays host to international students and professionals for research and other field activities.

### **3.1.3.2 Tanzania Coffee Research Institute (TaCRI) Tanzania**

Coffee Research Institute (TaCRI), incorporated in 2000 as a company limited by guarantee and without share capital under the Companies Ordinance (CAP. 212), became legally constituted and operational in September 2001. TaCRI is owned by the stakeholders whom it is serving. These include small and large-scale coffee farmers, cooperative societies and unions dealing in coffee, coffee processors, coffee traders, relevant NGOs, the private sector, and the Tanzanian Government.

In the Memorandum and Articles of Association which established TaCRI, the institute is mandated to implement, promote and carry out directly or through sub-contract, research into all matters relating to coffee production, pulping, processing, curing, liquoring, farming systems and systems of husbandry of other crops as are associated with coffee. TaCRI is further required to ensure that the objects and functions of the institute are in conformity with the Governments policies and

strategies in respect to coffee development. Hence, the major objective of TaCRI is to rejuvenate the Tanzania coffee industry, placing new emphasis on stakeholder-led, demand-driven research for development.

The Institute provides a crucial public service to stakeholders in the country's coffee industry by providing coffee producers with relevant and practical technological innovations and advice that will improve productivity and quality but also enhance profitability and livelihoods for coffee producers and increased competitiveness of Tanzanian coffee on the world market. TaCRI, derives its income from its members contribution through cess, government and donor contributions; collaborative activities; and the sale of materials and services (e.g. plant materials and publications).

The power to carry out the operations and management of the Institute are vested in the Board of Directors, through its Chief Executive Director. The Board has representatives from the Ministry responsible for agriculture and other stakeholders in the coffee industry-regulating agency.

### **3.1.3.3 Tobacco Research Institute of Tanzania (TORITA)**

Tobacco research in Tanzania almost ceased in 1995 when the Government discontinued funding of selected cash crops including tobacco. Subsequent to the liberalization of the economy in the spirit of the public-private partnership, TORITA was formulated and formally registered in 2000 as a company limited by guarantee. The institute is charged with the responsibility of improving performance of the tobacco sub-sector through research and development interventions. Membership to the institute is open to all organizations and/or institutions interested in tobacco research and production but policy and management of the institute are guided by a Board of Directors. TORITA is currently in the process of developing its Medium Term Strategic Plan to the year 2010 (Prof Maerere – personal communication) which will define its vision, mission and its research strategies and objectives.

### **3.1.3.4 Participatory Ecological Land Use Management-Tanzania (PELUM-Tanzania)**

Participatory Ecological Land Use Management -Tanzania is a consortium of 37 NGOs (to-date) ranging from those engaged in agriculture (crops and livestock), environment, formal and farmer training, research communities, farmer group networks such as 'MVIWATA' to those engaged in human rights. The organization was registered in 2002, and to-date, it operates in 14 of the 21 administrative regions of the country. Hence, PELUM-Tanzania as a network, represents the aspirations of farmers and other stakeholders at the grass-root level in different walks of life in the country. By virtue of PELUM involvement at the grass-root level, PELUM-Tanzania helps bring together agricultural-based networks through its activities which include organizing shows, seminars, fora for exchange of information on production, processing, marketing and other information relevant to a particular network. Through such activities, PELUM-Tanzania contributes significantly to the

development and functioning of the NARS and interaction with the formal research institutions. PELUM-Tanzania in collaboration with MVIWATA are in the forefront protecting indigenous cultivars and breeds, food security and increment in government budgetary allocation to agriculture.

PELUM-Tanzania is a member of the PELUM federation which operates in 10 East, Eentral and Southern African countries with headquarters in Zambia. PELUM-Tanzania is managed by a Board of Directors.

### **3.1.3.5 National Network of Farmer Groups in Tanzania ('MVIWATA' - a Ki-Swahili Acronym for Mtandao wa Vikundi vya Wakulima Tanzania.)**

MVIWATA is a national network of farmers' groups in Tanzania managed by an elected Steering Committee. MVIWATA was established by small-scale farmers from five regions in the central, southwest and northeast of Tanzania under the guidance of Sokoine University of Agriculture and was formally registered in 1995. MVIWATA's mission is to link farmers' groups and local networks of such groups together into a sound and strong national farmer organization capable of ensuring representation and advocacy of their interests in decision-making processes at all levels in order to create a joint platform for a strong and effective representation of farmers' interests in confronting their needs and challenges, mainly concerning participatory communication, and through lobbying, and advocacy, enhance organizational strength to provide agronomic and marketing services. In many areas MVIWATA is strongly represented at the village level with membership drawn from small scale farmers (irrespective of age, gender, farm type, religion, geographical origin, or political opinions). The organization has members in more than 100 local networks with some 1 000 affiliations with a current total membership of 60,000 through farmer groups and 10,000 individual member card holders.

MVIWATA provides a link with all key actors in the NARS, from policy makers to AR&D institutions (both public and private) and FOs (such as MVIWATA) play a role in agricultural innovation, which involves efforts to improve the current practices in agricultural production, processing, organization and marketing. MVIWATA works closely with R&D organizations and is a member of several national steering committees and Boards. Internationally, MVIWATA also networks with other farmer organizations and has links with many NGOs and funding partners.

### **3.1.3.5 Tanzania Farmers Association (TFA)**

This predominantly commercial consortium is engaged mostly in the supply of agricultural inputs

### **3.1.3.6 Tanzania Chamber of Commerce Industry and Agriculture (TCCIA)**

The TCCIA is a consortium of individual members and/or companies engaged in trade, industry (including agro mechanization/agro-processing industries) and agricultural production.

## **3.2 Institutional Framework of the NARS**

### **3.2.1 Relevant ministries**

The agriculture sector is guided by the Agriculture Sector Development Strategy (ASDS) which was adopted in 2001. In the ASDS, the designated agriculture-sector lead ministries are: The MAFC, MLD, Ministry of Trade, Industries and Marketing (MTIM), and the Ministry of Regional Administration and Local Government in the Prime Ministers' Office (PMO-RALG). It is important to note high level training for the agricultural sector takes place in Universities and other similar institutions which fall under the Ministry of Higher Education Science and Technology (MHEST).

### **3.2.2 Relevant strategies of national significance**

Most of the policies related to agriculture were formulated in the 1990s. In due course, there were a lot of transformations within the government machinery and thinking which culminated in the development of several other overriding strategies of national significance. These include Tanzania Development Vision 2025, National Strategy for Growth and Reduction of Poverty or 'MKUKUTA' of 2005, the Property and Business Formalization Program (PBFP or 'MKURABITA' (2005-2010) at national level and the 'MKUZA' for Zanzibar, and the Agricultural Sector Development Strategy (2001). These strategies are briefly described here and presented in full as annexes.

#### **3.2.2.1 The Tanzania Development Vision 2025**

Formulation of the Development Vision was first initiated in 1995 under the auspices of the Planning Commission. The Vision 2025 (Annex 1) has three major objectives which are; achieving quality and good life for all; good governance and the rule of law; and building a strong and resilient economy that can effectively withstand global competition. The thrust of these objectives is to attain a sustainable development of the people. The driving force behind developing Vision 2025 was the need to revamp the economy of Tanzania and wellbeing of her people. It was noted that, among other things, that:

- Agriculture, the backbone of the economy, has remained largely untransformed and continues to be dependent mainly on rainfall and on backward technology. Thus agricultural productivity is low and erratic.
- Productivity level in other sectors has equally remained low reflecting a low degree of creativity and innovativeness including low level of utilization of science and technology; and
- The structure of the economy has continued to be dominated by primary production, thus making the economy seriously vulnerable to frequent changes in international commodity market conditions and newer technologies which significantly use less raw materials.

What is envisioned by year 2025 is that Tanzanians will have graduated from a least developed country to a middle income country by the year 2025 with a high level of

human development. The economy will have been transformed from a low productivity agricultural economy to a semi-industrialized one led by modernized and highly productive agricultural activities which are effectively integrated and buttressed by supportive industrial and service activities in the rural and urban areas. By year 2025, it is expected that the economy will be strong and competitive characterized by diversified and semi-industrialized sector exemplified by:

- Macroeconomic stability manifested by a low inflation economy and basic macroeconomic balances;
- A growth rate of 8% per annum or more;
- An adequate level of physical infrastructure needed to cope with the requirements of the Vision in all sectors; and
- An active and competitive player in regional and world markets, with the capacity to articulate and promote national interests and to adjust quickly to regional and global market shifts.

Vision 2025 takes a holistic view of the economy and development of Tanzania and her people without necessarily going into great efforts to outline specific issues and programmes relevant to agriculture. However, by alluding to the fact that agriculture being the backbone of the economy has remained largely untransformed characterized by low productivity which is often erratic implies that agriculture research and training have not lived up to their expectation and further efforts are required in this sector. The vision 2025 envisages a Tanzania where agriculture is vibrant, and being one of the large countries in SADC, and rich in land and water resources, she is able to become a central player in the sector both in the region and at global level.

### **3.2.2.2 National Strategy for Growth and Reduction of Poverty (2005 - 2010) (NSGRP) or 'MKUKUTA'**

The national strategy (MKUKUTA) attached as Annex 2, was developed to address aspirations expressed in Tanzania's Development Vision (Vision 2025) for high and shared growth, high quality livelihood, peace, stability and unity, good governance, high quality education and international competitiveness. The strategy provides a framework to reduce poverty by 50 per cent by 2010 and to eradicate abject poverty by 2025. It is committed to the Millennium Development Goals (MDGs), as internally agreed targets for reducing poverty, hunger, diseases, illiteracy, environmental degradation and discrimination against women by 2015.

In the NSGRP, it is recognized that there is high prevalence of income poverty in Tanzania. According to the Household Budget Survey of 2000/01, about 18.7% of the population is below food poverty line while roughly 35.7% is below the national basic needs poverty line. Agriculture being a lead sector, accounting for 45% of GDP and providing livelihoods to roughly 82% of the population, the constraints to rural growth are largely related to those in the agricultural sector, broadly defined to include livestock and bee-keeping. The strategy recognizes that income poverty for

the majority of the population of Tanzania can only be addressed by addressing agricultural constraints which include, low productivity of land labour and production inputs; underdeveloped irrigation potential, limited capital and access to financial services; inadequate agricultural technical support services; poor rural infrastructure hindering effective rural-urban linkages; infestations and outbreaks of crop, animal pests and diseases; erosion of natural resource base and environmental degradation.

The MKUKUTA and the Zanzibar Strategy for Growth and Reduction of Poverty, 2006-2010 (MKUZA) provide guidance for poverty-reduction efforts in the United Republic of Tanzania. MKUKUTA focuses on outcomes in three broad clusters: (a) growth and income poverty reduction; (b) improvement in the quality of life and social well being; and (c) governance and accountability. MKUZA also focuses on three clusters: (a) growth and reduction of income poverty; (b) social services and well being; and (c) good governance and national unity. MKUKUTA and MKUZA enable more effective linkages with the Millennium Development Goals and focus on results-based management. They emphasize sectoral linkages and synergies; focus on mainstreaming cross-cutting issues such as HIV/AIDS and gender; and emphasize the importance of a conducive environment for growth and poverty reduction. Monitoring and evaluation systems accompany both strategies.

For the agricultural sector, the constraints outlined in the NSGRP require that efforts are increased in the areas of higher education, science and technology in order to develop a labour force that has the capacity to evolve innovative technological advances that increase returns and productivity to land, labour and capital. The NSGRP stresses on the need to strengthen linkages between higher education, science and technology and research and development institutions and local communities in agriculture, industry, SMEs, trade and social development.

### **3.2.2.3 Property and Business Formalization Program (Mpango wa Kurasimisha Rasilimali na Biashara za Wanyonge Tanzania or 'MKURABITA')**

The Property and Business Formalization Program (PBFP) is an initiative of the Government of the United Republic of Tanzania, aimed at economically empowering the poor majority in the country, by increasing their access to property and business opportunities, towards development of a strong expanded market economy, which is governed by the law. The Program (Annex 3) is conceived within the National Strategy for Growth and Reduction of Poverty (MKUKUTA and the Zanzibar Strategy for Growth and Reduction of Poverty, 2006-2010 (MKUZA) which together guided poverty-reduction efforts in the United Republic of Tanzania. MKURABITA specifically seeks to facilitate transformation of property and business entities in the informal sector, into legally held and formally operated entities in the formal sector of the economy. It is currently housed in the Office of the President as its institutional home.

The goal of the programme is to empower the target groups and individuals, especially in the informal sector, so that they can participate effectively in the modern formal market economy. The objective of the programme is to build legal and institutional framework for property (real estate) and businesses that will bring together, standardize and modernize the prevailing local customary arrangements and property matter, so as to create unified national property and business legal system that incorporates all sectors of the society. The programme targets individuals and groups in the informal sector who have limited access to capital and cannot function to their full capacity in the modern market economy. It is envisaged that the entry of such individuals and groups into the formal market economy will enhance their opportunities in using their assets to access capital and thus improve national economic growth and reduce individual household poverty. The Property and Business Formalization Programme is expected to contribute positively to the country's economy in all sectors including agriculture.

#### **3.2.2.4 Agricultural Sector Development Strategy (2001)**

The Agricultural Sector Development Strategy (Annex 4) was formulated partly as a mechanism to re-invigorate the agricultural sector and consequently, the national economy. The primary objective of the ASDS is to create an enabling and conducive environment for improving profitability of the agriculture sector as the basis for improving farm incomes and reduce poverty in the medium and long-term. The medium term objectives of the ASDS are determined by the NSGRP and the long term goals by the Tanzania Development Vision 2025.

The ASDS focuses on agricultural productivity and profitability, promotion of private sector/public sector and processor/contract grower partnerships. Implementation of the ASDS is effected by the Agricultural Sector Development Programme (ASDP) which is based on participatory implementation through District Agricultural Development Plans (DADPs). The ASDS is viewed as an instrument for guiding public and private efforts towards broadly shared objectives and specific inputs and outputs. In line with implementation of the LGRP which aimed at transferring responsibility for formulating, implementing and monitoring agricultural development programmes and projects to the districts and grassroots, the ASDS was designed to accommodate local development needs and opportunities in the framework of envisaged public/private partnerships. The implementation of the ASDS is effected through the Agricultural Sector Development programme (ASDP) formulated in 2003.

The ASDS was developed at the same time the GoT implemented the Local Government Reform Programme (LGRP) and the Public Service Reform Programme (PSRP) were being implemented. Hence, the ASDP is implemented within the framework of reforms in the Local Government and Public Service with interventions being implemented at district level and at national level while taking into consideration other sectors in the country.

### 3.2.3 Relevant Ministries and Policies for Agricultural Research and Training

As defined in the ASDS, The sector lead ministries include MAFC, MLD, MITM, and PMO-LGA where specific interventions are implemented. The relevant policies are listed on Table 5 with a brief description for each policy presented. Full texts of the policies are attached separately as Annexes 6 to 17.

**Table 5: List of Policies Relevant**

	<b>Agriculture Sector Lead Ministries</b>	<b>Relevant policies</b>
1.	Ministry of Agriculture Food Security and Cooperatives	<ul style="list-style-type: none"> <li>• Agricultural and Livestock Policy (1997)</li> <li>• National Agriculture and Livestock Extension Policy and Implementation Guidelines - NALPIG (1995)</li> <li>• Cooperative Development Policy (1997)</li> </ul>
2.	Ministry of Livestock Development	<ul style="list-style-type: none"> <li>• National Livestock Policy (2006)</li> </ul>
3.	Ministry of Natural Resources and Tourism	<ul style="list-style-type: none"> <li>• National Forest Policy (1998)</li> <li>• The Beekeeping Policy (1998)</li> <li>• National Water Policy (2002)</li> </ul>
4.	Ministry of Industries, Trade and Marketing	<ul style="list-style-type: none"> <li>• The SME Policy (2002)</li> </ul>
	<b>Other Relevant Ministries/Institutions</b>	
5.	Ministry of Lands and Human Settlement	<ul style="list-style-type: none"> <li>• The National Land Policy (1997)</li> </ul>
6.	Ministry of Higher Education, Science and Technology	<ul style="list-style-type: none"> <li>• National Higher Education Policy (1999)</li> <li>• National Science and Technology Policy (1995)</li> </ul>
	Ministry of Community Development, Women Affairs and Children	<ul style="list-style-type: none"> <li>• Policy on Women in Development in Tanzania</li> </ul>
	Ministry of Communications and Transport	<ul style="list-style-type: none"> <li>• National Information and Communications Technologies Policy (2003)</li> </ul>
7.	Prime Ministers' Office-Regional Administration and Local Government	<ul style="list-style-type: none"> <li>• The National HIV/AIDS Policy</li> <li>• Local Government Reform Programme</li> </ul>

#### 3.2.3.1 Agricultural and Livestock Policy (ALP)

The Agricultural and Livestock Policy (1997) was developed under the then Ministry of Agriculture and agriculture stood for both crops and livestock (Annex 5). The goal of the policy is to *"...improve the well-being of the people whose principle occupation and way of life is based on agriculture and most of whom are small holder farmers and livestock keepers...the focus of this policy is to commercialize agriculture so as to increase income levels."* In this policy, the government redefined its role in agriculture and recognized the need for the private sector to assume a dominant role while the government performs core public sector support functions which, among others, include research, training, extension, policy formulation, information services, sanitary regulations, quality control, protection of the environment, creation of optimal market conditions and promotion of agricultural growth. These functions were purposefully selected because they were deemed less amenable to privation even though it was envisaged that, in the long term, some of the functions could be shifted to the private sector. In the latter category, extension services for dairy, poultry and horticultural crops were expected to be among the first to shift to the private sector.

The majority of farming households produce crops and keep some kind of livestock. The ALP (1997) was a comprehensive policy designed to cater for both the crop and livestock sectors bearing in mind that However, since that time, the then Ministry of Agriculture went through various transformations in name and composition, notable of which, was the eventual transfer of livestock first to the Ministry of Water and Livestock Development in the 1990's and later to a separate Ministry of Livestock Development. In view of these developments a separate Livestock Policy has been formulated and the Agricultural and Livestock Policy is being reviewed into the Agricultural Policy which will be more focused on the crop sub-sector.

### **3.2.3.2 National Agriculture and Livestock Extension Policy and Implementation Guidelines - NALPIG (1995)**

This NALPIG (electronic copy not available) were developed to elaborate the policies on extension contained in the Agriculture and Livestock Policy of 1997. The NALPIG were prepared to advise staff involved in providing crop and livestock extension services to the farm families of mainland Tanzania. Despite being prepared by the then Ministry of Agriculture and Livestock Development, they were intended to assist anyone involved in extension work, including staff of governmental and non governmental organizations.

However, various changes have taken place since the development of the NALPIG, notable of which is the split of livestock sector first paired with water and currently as an autonomous MLD. As a result of these changes and other external factors the NALPIG is currently under review to incorporate institutional and policy reforms that have taken place since the adoption of the NALPIG Prof A.Z. Mattee - personal communication). The new policy will seek to transform agricultural extension services to being participatory, demand-driven, market-oriented, cost-effective, gender sensitive and provided in a collaborative manner by involving various stakeholders.

### **3.2.3.3 The Cooperative Development Policy (1997)**

The Cooperative Development Policy (Annex 6) was developed in the context of the government recognition of the diverse nature of the cooperative sector which without limitations includes: agricultural productive and processing cooperatives, rural supply cooperatives, agricultural marketing cooperatives, fishery cooperatives, labour contracting cooperatives and many other types of cooperatives. In the policy statements, it is stated that the government will protect cooperatives through appropriate legislation, introduce cooperative education in schools and colleges to prepare the youth for self help and self employment. The policy also opens doors for research into fields affecting cooperatives' activities such as improvement of quality of commodities, production techniques, investments and expansions.

(Note - efforts to secure a revised version of the Cooperative the revised Cooperative Development policy of 2002 are contuing and may be included in the final report)

#### **3.2.3.4 Livestock Development Policy (2002)**

The National Livestock Policy (NLP) policy explains the intentions of the government and other stakeholders to meet the challenges in the livestock industry. Specifically, the main aim of the policy (Annex 7) is to establish an environment where opportunities for higher incomes and employment are created for resource-poor livestock farmers including the commercial farming sector. The vision of the livestock industry is that *“By year 2025, there should be a livestock sector, which to a large extent shall be commercially run, modern and sustainable, using improved and highly productive livestock to ensure food security, improved income for the household and the nation while conserving the environment.”*

The long term objectives are towards attaining food security, poverty reduction, increased national income and hence increase the contribution of the livestock industry to the national GDP.

The policy has the following three goals:

- To encourage the development of commercially oriented, efficient and internationally competitive livestock industry;
- To support the emergence of a more diverse structure of production with a large increase in the numbers of successful smallholder livestock producer enterprises and;
- To conserve livestock resources and put in place policies and institutions for sustainable resource development and use.

The NLP will address specific key issues including animal identification, registration and traceability, animal welfare, indigenous technical knowledge, biotechnology and bio-safety, organic livestock farming, food safety, emerging diseases, livestock products regulatory institutions, professional regulatory institutions, animal genetic resource conservation, livestock stocking, veterinary laboratory system, livestock related disasters and pet animals.

The policy seeks to make adjustments and to align the nations’ livestock industry with the new world trading order and pursue further international trade reforms within East African and Southern African regions, in line with progress towards implementing the East African Community (EAC) and Southern African Development Community (SADC) free trade protocols for greater trade and integration in livestock products in order to contribute to growth and development.

#### **3.2.3.5 The National Forest Policy (1998)**

The forest sector is vested with the responsibility of managing the forest resources estimated at 33.5 million hectares of forests and woodlands sustainably. This is recognition of the significance of forests which offer habitat for wildlife, beekeeping, natural ecosystems and genetic resources. The overall priorities and current constraints evolve around various kinds of pressure on forest resources including expansion of agricultural activities, livestock grazing, wild fires and other human activities.

The overall goal of the National Forest Policy (Annex 8) is to enhance the contribution of the forest sector to the sustainable development of Tanzania and the conservation and management of her natural resources for the benefit of present and future generations in line with the objectives of the forest sector which focus on:

- (i) Ensured sustainable supply of forest products and services by maintaining sufficient forest area under effective management;
- (ii) Increased employment and foreign exchange earnings through sustainable forest-based industrial development and trade;
- (iii) Ensured ecosystem stability through conservation of forest biodiversity, water catchments and soil fertility; and
- (iv) Enhanced national capacity to manage and develop the forest sector in collaboration with other stakeholders.

Based on the above objectives the four policy areas are:

- Forest land management
- Forest-based industries and products
- Ecosystem conservation and management
- Institutions and human resources

### **3.2.3.6 The Beekeeping Policy (1998)**

The beekeeping sector was managed without a policy since 1949 when it was officially formed as a department under agriculture. The main goal of the Beekeeping Policy (Annex 9) is to enhance sustainable contribution of the sector for socio-economic development and environmental conservation for the present and future generations. The policy covers both stinging and non-stinging (stingless) honeybees regardless of ownership or administration and it includes both feral (wild) and domesticated (kept in hives) colonies. The policy identifies six main areas namely establishment and sustainable management of bee reserves; apiary management, beekeeping-based industries and products; beekeeping in cross sectoral areas; beekeeping for ecosystem management and institutions and human resources. The policy provides, for each of the policy areas, brief policy statements, instruments and directives to be applied.

### **3.2.3.7 National Water Policy (2002)**

Over the past 15 years the demands for water have intensified with the increase in population and concurrent growth of economic activities requiring water as an input such as in hydropower generation, irrigated agriculture, industries, tourism, mining, livestock keeping, domestic, fisheries, wildlife and forestry activities. Water scarcity is perceived at many places due to unreliable rainfall, multiplicity of competing uses, degradation of sources and catchments. Water scarcity threatens food security, energy production and environmental integrity and consequently there are water use conflicts between sectors of the economy. Today only about 50% of the rural population has access to a reliable water supply service.

The main objective of the National Water Policy (Annex 10) is to develop a comprehensive framework for sustainable development and management of the Nation's water resources, in which an effective legal and institutional framework for its implementation will be put in place. The policy aims at ensuring that beneficiaries participate fully in planning, construction, operation, maintenance and management of community based domestic water supply schemes. This policy seeks to address cross-sectoral interests in water, watershed management and integrated and participatory approaches for water resources planning, development and management. Also, the policy lays a foundation for sustainable development and management of water resources in the changing roles of the Government from service provider to that of coordination, policy and guidelines formulation, and regulation.

### **3.2.3.8 Small and Medium Enterprise Development Policy (2002)**

The private sector has started playing an ever increasing role in creating incomes and employment. Small and Medium Enterprises (SMEs) account for a large share of the enterprises active in Tanzania. The SME policy (Annex 11) was developed in recognition that SMEs are the emerging private sector and do form the base for private sector-led growth. SMEs, important as they are to the economy, have been facing a number of problems despite the on-going reform programmes. This is due to a number of factors, one of which is a persistent culture that has not recognized the value of entrepreneurial initiative in improving the lives of the people. Other factors include complex, bureaucratic and costly legal, regulatory and administrative environment where SMEs are at a greater disadvantage than their counterparts that are larger in size.

Economic Reform Programmes implemented by the Tanzanian Government have been based on the philosophy that Tanzania is committed to a market economy whereby the private sector will take the lead in creating incomes, employment and growth. On the other hand, the State will be a producer of public goods, play a regulatory role to level the playing field and create conducive environment for the private sector to take the lead in driving economic growth. This philosophy is evident in almost all policy statements made since 1986 and in particular after 1996. The high cost of compliance to regulations may discourage potential entrepreneurs from formally setting up their businesses, while driving some existing enterprises out of business and those working for them into unemployment. Also due to insufficient competition and inadequate information on the credit markets of Tanzania, banks are discouraged and not willing to lend to SMEs. Legislation and regulation on collateral exclude movable assets as mortgages, thereby putting smaller businesses that own more of these assets into a disadvantaged position vis-à-vis the larger business counterparts. SMEs have lower demand for business

Strategies for implementing the SME development policy focus on three main areas, namely, the creation of an enabling business environment, developing of financial and non-financial services and putting in place supportive institutional

infrastructure. The SME Policy takes into account the special constraints and opportunities faced by this sector and aims at strengthening institutions which will address these constraints and maximize exploitation of the opportunities.

### **3.2.3.9 National Land Policy**

Tanzania has a land area of about 942,600 square kilometers of which 888,200 is surface land, the rest being mountains, rivers and oceans, and a population currently estimated at about 35 million people. The overall objective of the national Land policy (Annex 12) is to promote and ensure a secure land tenure system, to encourage the optimal use of land resources, and to facilitate broad-based social and economic development without upsetting or endangering the ecological balance of the environment. Key policy issues include:

- All land in Tanzania is public land vested in the President as Trustee on behalf of all citizens;
- Land has value;
- The rights and interests of citizens shall not be taken without due process of law, and;
- Village councils will administer village lands within the existing laws and procedures.

### **3.2.3.10 National Higher Education Policy (1999)**

The policy (Annex 13) defines a higher education institution as one, which, by its mission, programme(s), entry requirements and awards and, having satisfied the accreditation requirements of the Higher Education Accreditation Council (HEAC), offers a level of education and training that leads to intermediate and/or full professional qualifications and/or competence. The policy recognizes universities as the highest institutions dedicated to intellectual development of mankind and society in general. As such, universities are expected to concentrate on research, teaching and public service or consultancy. On the other hand, intermediate institutions of higher education are devoted to human resource development for the middle and intermediate occupational level of society for which they concentrate on the pedagogical mission of teaching, instructing, career training and role modeling. The Policy further points out that Universities shall award degrees, postgraduate diplomas and postgraduate degrees in accordance with programmes of study conceptualized and designed in accordance with the universities' mission as defined.

The policy also seeks to correct the imbalance in student enrolment between the sciences and humanities by, among other strategies, admitting into universities and the allied non-university institutions of higher education increasingly bigger student numbers into science and technology-based programmes and providing attractive training and employment packages.

### **3.2.2.10 The National Science and Technology Policy (1995)**

The first National Science and Technology policy was enacted in 1985 and revised in 1995 (Annex 14). The major thrust of this policy is to establish relative priorities

programme for generating new knowledge and to determine strategies for the application of science and technology development in Tanzania. The policy is therefore a tool to develop and manage science and Technology in a manner consistent with physical and human endowments of the country.

The broad objectives of the Science and Technology Policy for Tanzania are: Promote science and technology as tools for economic development, apply science and technology for the improvement of human, physical and social well being and for the protection of national sovereignty; promote scientific and technological self-reliance in support of economic activities through the upgrading of R&D capabilities; promote and encourage the public and private productive sectors in developing science and technology; promote active participation of women in science and technology and establish and/or strengthen national science and technology institutions. The major stakeholder institutions are universities, technical institutes and government parastatal and private R&D institutions.

The policy supports the formulation and/or strengthening of professional associations, science clubs, academies of science and areas, especially in educational institutions, in order to enhance scientific culture, public awareness and overall progress in science and technology. It is anticipated that, these associations should take an active role in popularizing science and technology through seminars, workshops, lectures, films and publications. In addition, A scientific and technical advisory committee on science and technology has been established in order to advise the president in addition to the Inter-Ministerial Technical Committee (IMTC) of the cabinet.

### **3.2.3.11 Policy on Women in Development (1992)**

Women constitute slightly over half of the population of the country and three quarters of the 80% of the population engaged in agriculture. This policy (Annex 15) was developed to help the public at large, political parties, leaders, government institutions, NGOs and experts to understand clearly the concept of Women in Development so that laws, plans and programmes being formulated and implemented, take into account the need to integrate women in national development plans. The policy calls for emphasis to be directed at promoting women talents and abilities which will facilitate full participation of women in development activities, their liberation and the improvement of womens' living conditions and that of the society in general.

One of the objectives of the policy is to ensure full participation and involvement of women in national development programmes so as to tap and fully utilize their abilities and potentials.

The policy is being implemented concurrently with other sectoral policies and government decisions. Specifically the policy calls for women machinery, the Ministries responsible for Regional Administration, Local governments, Agriculture, Livestock, Cooperatives, Commerce, Industries, Science, Technology, Higher

education, Water, Energy and Minerals to take positive action to ensure availability and dissemination of technologies which reduce women's workload.

#### **3.2.3.12 National Information and Communications Technologies Policy (2003)**

The National ICT Policy's (Annex 16) aims to provide a national framework that will enable ICT to contribute towards achieving national development goals and transform Tanzania into a knowledge-based society through the application of ICT. The policy articulates ten focus areas drawn from the aspirations of Tanzania's Vision 2025. It is stated in the policy that the Government will embrace ICT as an integral part of its development strategy and empower all citizens to use it to fight poverty, ignorance and disease so as to improve the quality of their lives. Hence, the Government shall create the necessary enabling environment to facilitate the deployment, utilisation and exploitation of ICT in all sectors of life.

The Government will encourage all productive sectors, including agriculture, to incorporate ICT in their development plans by promoting and supporting the implementation of nation-wide ICT systems for rural development activities, agricultural, horticultural and livestock extension for farmers, career guidance for youth, technology guidance for rural enterprises, micro-level planning, and other sectors. It is also expected that the National ICT policy will facilitate the Government will take steps to move Tanzania's economy into line with the new global economy while minimizing the adverse effects of globalization on the local economy and tax revenues.

#### **3.2.3.13 National Policy on HIV/AIDS (2001)**

The HIV/AIDS policy (Annex 17) provides the general framework for collective and individual response to HIV/AIDS pandemic in Tanzania. The overall goal of the policy is to provide for a framework for leadership and coordination of the national multi-sectoral response to the HIV/AIDS epidemic. This includes formulation, by all sectors, of appropriate interventions which will be effective in preventing transmission of HIV/AIDS and other sexually transmitted infections, protecting and supporting vulnerable groups, mitigating the social and economic impact of HIV/AIDS. It also provides for the framework for strengthening the capacity of institutions, communities and individuals in all sectors to arrest the spread of the epidemic. On roles and financing, the policy provides for the need to strengthen the roles of all the sectors; public, private, NGOs, faith groups, PLHAs, CBOs and other specific groups to ensure that all stakeholders are actively involved in HIV/AIDS work to provide a framework for coordination and collaboration.

#### **3.2.3.14 The Local Government Reform Programme (LGRP)**

Following the adoption of a decentralized government system in Tanzania, districts through the LGA became the focal points of all development activities including agricultural research. Hence, all activities in Tanzania are implemented within the context of local governments down to the village level. The LGRP (Annex 18) was formulated and implemented by the government in order to address problems

which constrained the performance of the local government authorities. Through the programme, the government intends to strengthen local authorities and transform them to be effective instruments of social and economic development at local level. This has been addressed by the government in "A Local Government Reform Policy Paper" of 1998. The main goal (long-term) of LGRP is to contribute to the Government's efforts of reducing the proportion of Tanzanians living in poverty. Its purpose is to improve quality, access and equitable delivery of public services, particularly to the poor. These must be provided through reformed and autonomous local authorities. The reform aims at, among other things:

- Letting people participate in government, at Local level and elect their leaders e.g. Councilors, Mtaa and Kitongoji leaders etc.
- Bringing public services under the control of people through their local councils.
- Giving Local Councils powers (Political devolution) over all local affairs.
- Improving financial and political accountability.
- Securing finances for better public services.
- Creating a new local government administration answerable to local councils and to local needs.
- De-linking local administrative leaders from their former ministries.
- Creating new central -local relations based not on orders but on legislation and dialogue.

### **3.3 Registered Institutions/Organizations Delivering Agricultural Research and Training**

#### **3.3.1 Registered institutions for research**

The list of registered agricultural research institutions and other institutions providing agricultural research is indicated on Table 6 together with the research mandates, in broad terms, for each institution.

**Table 6: Registered Institutions and Organizations Delivering Agricultural Research**

<b>Registered institutions/organizations/Department</b>	<b>Affiliated Ministry/region</b>	<b>Research focus areas</b>
<b>POLICY ORGANIZATIONS</b>		
1. ESAMI	Eastern and southern African states	Policy formulation and analysis, governance, project management
<b>Public sector institutions</b>		
1. DRT	MAFC	Land use, Crop and livestock production, Irrigation and mechanization, Farming systems and socio-economics
2. DCD	MAFC	Crop development, extension and communication
3. DRTE	MLD	all aspects of small and large stock research, animal products, pastures
<b>Parastatal or semi autonomous public institutions</b>		
1. TPRI	MAFC	Pests and pest management, pesticide use, pesticide analysis, plant health and quarantine issues, vectors and vector-borne disease control/management, agro-biodiversity
2. TIRDO	MITM	Industrial machinery for agro-processing
3. CAMARTEC	MITM	Farm mechanization, tools and field equipment
4. TAFORI	MNRT	<ul style="list-style-type: none"> <li>• Agro-forestry</li> <li>• Forest and non-forest products</li> <li>• Timber production and woodlots</li> <li>• Fisheries</li> <li>• Water resources</li> </ul>
5. TAFIRI	MNRT	
<b>Universities and higher education training institutions</b>		
1.SUA	MHEST	All aspects of crop and livestock production and management, including plant and soil health, soils and water management, agricultural economics and agri-business, policy issues, post-harvest handling and value addition technologies, forest sciences and wildlife, mechanization and irrigation, extension and communication, farmer organizations
2. UDSM	MHEST	Plant pathology, entomology, microbiology and biotechnology, marine and aquatic resources, natural resources, policy analysis and other economic issues resources
3. MUCCOBS	MHEST	Cooperative management, governance, business management
4. MU	MHEST	Governance, management of agricultural enterprises
5. OUT	MHEST	All fields of crop and livestock research
6. Tumaini University	Private (ELCT)	Socio-economic aspects of agriculture
7. IRDP	MHEST	Rural development planning and management, environment and governance
<b>Private institutions, NGOs and CSOs</b>		
1. TRIT	Board of Trustees	All aspects of coffee research and extension, farmer training
2. TaCRI	Board of Trustees	All aspects of tea research and extension, farmer training
3. TORITA	Board of Trustees	All aspects of tobacco research and extension, farmer training

<b>Registered institutions/organizations/Department</b>	<b>Affiliated Ministry/region</b>	<b>Research focus areas</b>
4. ESRF	Management Board	Policy formulation and analysis, governance
5. REPOA	Management Board	Policy formulation and analysis, poverty issues, governance
6. PELUM Tanzania	Association of various NGOs	Stakeholders in all aspects of agricultural research at community level
7. MVIWATA	Network of farmer groups	Stakeholders in all aspects of agricultural research at community level
<b>International Institutions (some examples)</b>		
1. ASARECA	Eastern and Central Africa sub-region	All aspects of research on Crops, livestock, natural resources
2. IITA	Africa region	Root crops, legumes and cereals
3. WARDA/ECARRN	West Africa Sub-region	Rice
4. ICRAF	Africa region	Agroforestry

### **3.3.2 Registered institutions delivering high level training and in-service professional Training in agriculture**

The basic qualification for one to be considered an Agricultural Researcher in Tanzania is a bachelors' degree in agriculture or any related field. The institutions and organizations delivering high level and in-service training in agriculture are listed on Table 7 together with a brief description of the major area of training. The majority of agricultural researchers are trained locally particularly at the bachelors' degree level and SUA is a key partner of NARS for the training component. SUA offers training in all fields of agriculture including veterinary medicine, forestry, wildlife and environment at all levels of professional training (B Sc, MSc and PhD) in a wide range of disciplines in agriculture and related areas. SUA will also begin to offer, during 2008/09 academic year a SADC regional MSc course in Soil and Water Management. MUCCOBS, a constituent college of SUA, offers training at bachelors level on cooperatives, business studies and community development. Other institutions include UDSM and MU. At the University of Dar es Salaam, training related to agriculture, is offered in the faculties/Institutes of science, marine science and social sciences and MU offers training in the faculties of social sciences, Science and Technology and Public administration and Management. A list of degree programmes offered at SUA, MUCCOBS, UDSM and MU is attached (Annex 19 a-d). Most other institutions listed on Table 7 offer in-service training either at postgraduate level and/or short courses or training of farmers.

**Table 7: Training Institutions and Organizations**

<b>Registered institutions/organizations</b>	<b>Affiliated Ministry/region</b>	<b>Training mandate</b>
<b>POLICY ORGANIZATIONS</b>		
1. ESAMI	Eastern and southern African states	Postgraduate training in business management, policy formulation and analysis, governance, project management
<b>Universities and higher education training institutions</b>		
1.SUA	MHEST	Bachelors to PhD level training in all aspects of agriculture, forestry, wildlife and environmental sciences and rural development at bachelors, masters and PhD levels, short courses and training of farmers
2. UDSM	MHEST	Bachelors to PhD level training in basic sciences, marine and aquatic resources, and natural resources, economic and development studies at bachelors, masters and PhD levels, short courses
3. MUCCOBS	MHEST	Bachelors level training in Cooperative and business studies, financial management and accounting, governance at bachelors and masters levels, short courses, training of farmers
4. MU	MHEST	Bachelors to PhD level training in management of science and technology, rural development, public administration
5. OUT	MHEST	Bachelors to PhD level training in science programs
6. IRDP	MHEST	Bachelors level training in environment management
<b>Private institutions, NGOs and CSOs</b>		
1. TRIT	Board of Trustees	Research attachment, short term training for researchers and extension
2. TaCRI	Board of Trustees	Research attachment, short term training for researchers and extension
3. TORITA	Board of Trustees	Research attachment, short term training for researchers and extension
<b>International Institutions (some examples)</b>		
1. ASARECA, IITA, ICRAF	Regional states in Eastern, central and southern Africa	Research attachment, short term training for researchers

## 4.0 COORDINATION OF THE NARS

### 4.1 Formal Existence of NARS

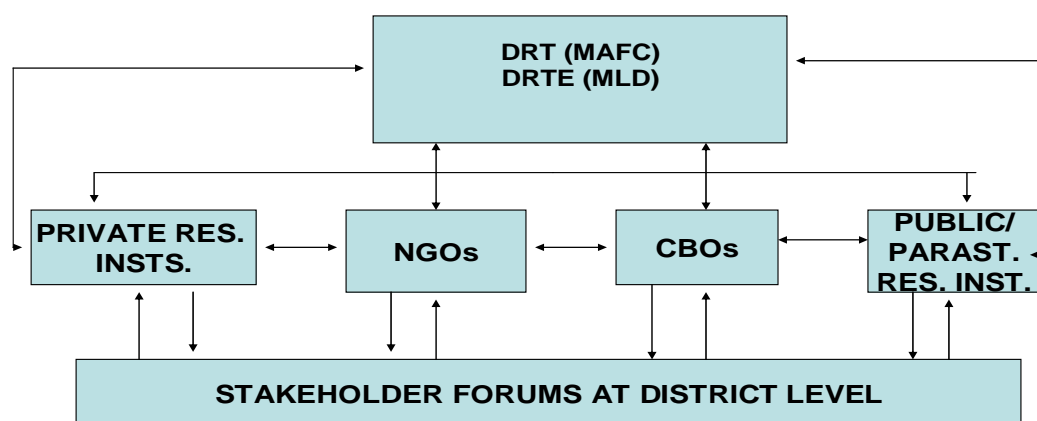
A National Agricultural Research System (NARS) is an operational system established for enhancing the scientific and technical delivery of research in agriculture within which effective coordination between all research institutions or research implementing institutions is organized through monitoring bodies representing the research stakeholders. The institutions comprising the Tanzania NARS have been indicated in earlier sections. However, the formal existence of membership to the NARS is not spelt out in black and white.

## **4.2 Institutional Structures and Relationships**

The component institutions under the NARS are separate entities with separate management systems. With so many organizations involved, there are as many organizational structures, all of which cannot be presented in this document. Different administrative set ups imply that there are different reporting channels which, by themselves, can be limitations in effecting smooth coordination of NARS. The officers responsible for research and training administration in each institution is unique and, in most cases, answerable to either a Ministry, Board of Directors or Board of Trustees, as the case may be. However, there are opportunities for institutions to interact and harmonize research needs and plans in collaboration with stakeholders at the grass root level. Implementation of the ASDS is facilitated through ASDP and, in line with decentralized governance; activities are implemented through DADPs at the level of LGAs. This setup provides opportunities for stakeholder interaction with research and training institutions.

Training at the level of Technicians and farmers is embedded within DRT for MAFC and DRTE for MLD. On the other hand, basic and professional training of researchers is conducted mostly by Universities but also by other institutions of higher learning outside the university system. The situation being that Universities and other institutions of higher learning which under the MHEST do most of the training, the major end users of the product (researchers) are in different Ministries. Hence, the need for research and training institutions to work together towards addressing each others' needs is recognized. For instance, in the SUA Council (equivalent of Board of Directors) and Senate (highest academic body), there are representatives from DRT and DRTE thus providing opportunities for dialogue collaboration on matters of mutual interest related to agricultural research and training. This set up can be viewed as a direct link between the research system and training.

Both NGOs and CBOs operate at grass-root levels and often offer the nearest linkages to farmers. Over the years, these organizations have proved to be useful linkages between research, training and farmers. Through empowerment programmes, farmers can conceptualize projects to address problems of their concern or can raise needs for research and/or training on particular issues. By working together with research and training service providers at the LGA level, NGOs and CBOs can develop projects and seek funds to address problems or issues raised thorough DADPs. This implies that the interaction between research and training is inevitable and begins at the grass root level. The mode of interaction between institutions in the research and training system is summarized in the chart below:



**Figure 1. Institutional relationships in research**

The chart indicates two-way interactions at all levels but there is room for improvement on the strength and responsibility of each player. There is an increasing tendency for NGOs and CBOs gaining popularity and acceptance in the farming community. Hence, there is need to improve and formalize linkages between these organizations and research, both in public and private research and training institutions.

#### **4.3 Coordination and Monitoring Mechanisms of the NARS**

The NARS, as described earlier, is comprised of a number of government Ministries and several institutions, affiliated to Government Ministries or private entities. Despite the formal existence of the NARS, however, each of the entities coordinates its own research programme. However, there lacks a formal national forum for the coordination of the NARS. On the basis of ecological zonation, the DRT component of the NARS is divided into seven zones (Figure 2) based on similarity in agro-ecology. Under a MoU signed between SUA and the MAFC, SUA is considered as the eighth research zone even though the management of the latter is entirely outside the mainstream jurisdiction of the MAFC, in the MHEST. Livestock research and training, though currently under a different ministry, is also implemented following the same zonal arrangement and centrally coordinated by the Department of Research Training and Extension (DRTE) in the MLD.

The Agricultural Research Institutes under the MAFC and Livestock Research Institutes (LRI) under the MLD, are coordinated first through the Zonal Research and Technical Committee (ZRTC), and nationally, the DRT and DRTE, respectively. Stakeholder involvement is effected at the zonal level through participation in the Zonal Research and Technical Committee which includes farmers, traders, policy makers and researchers. On the other hand, the Board of Directors which oversee research and extension activities in private research institutions have, as members, representatives of MAFC, together with other stakeholders from the farming

community, traders and other investors. Research activities in NGOs and CSOs are coordinated through Boards of Directors or Boards of Trustees whose members are drawn from their own stakeholders but usually include persons from relevant government departments and other institutions, and often members from academic institutions.

Across Ministries and institutions, coordination of the NARS is loosely facilitated through the Tanzania Commission for Science and Technology (COSTECH), a parastatal organization under the MHEST. COSTECH has established a number of Research and Development (R&D) Advisory Committees for various aspects of R&D, of which one is the R&D Advisory Committee on Agriculture and Livestock (R&D ACAL)). The R&D ACAL draws members from the DRT, DRTE, private sector, NGOs and universities and is guided by a number of Terms of Reference which include:

- Recommend on the formulation, implementation and review of national agriculture and livestock policy;
- Promote national capacity building in agriculture, including *inter alia*, training, technology transfer, innovation systems and infrastructure development;
- Promote cooperation, collaboration and linkages in agriculture and livestock at national, regional and international levels;
- Advise the government on priority setting in agriculture R&D;
- Advise the government and multi stakeholders on funding mechanisms in agriculture and livestock R&D;
- Advise the government in IPR and commercialization of agriculture and livestock products

However, with so many institutions involved, most of which are not directly under the MAFC, and individual bodies for management and coordination, COSTECH is hardly able to effectively coordinate all agricultural research in the NARS. At the national level COSTECH organizes bi-annual stakeholders meetings and produces reports on the status of agricultural research in the country. However, both the ALAC and the stakeholders' meetings do not represent effective coordination of agricultural research since they are guided by any binding regulations for defaulters.

**Figure 2: Organization of Agricultural Research in Tanzania**

L = Lake Zone; N = Northern Zone; W = Western Zone; C = Central Zone; E = Eastern Zone; SH = Southern Highlands Zone; S = Southern Zone

## **5.0 MANAGEMENT OF RESEARCH AND TRAINING PROGRAMMES**

### **5.1 Action Plans and Planning Mechanisms**

The DRT/MAFC and the DRTE/MLD deal with farmer's problems and the whole process is driven by the stakeholders. Problem identification is achieved following value chain approach with stakeholders participation. Priority setting is done in collaboration with stakeholders to identify areas of research. A call for proposals is put out and eventually awarded following technical and financial evaluation of the proposals. Farmers or farmer groups usually participate throughout the implementation of the research and finally results from the research are then sent back to farmers using appropriate uptake pathways

The overseers of the entire process are the ZSC and ZARDEF technical committee, both of which are dominated by farmers, e.g. in the ZSC, 50% of the members are farmers. There is also sector wide representation in each of the committees' in which NGOs, and the private and public sectors are represented. At the farmer level, NGOs and CBOs play an important role in guiding farmers to identify and determine their needs. The process often involves taking farmers through a value chain in order to understand the whole chain and determine their own needs in terms of research or development activities. The relationship between production, natural resources and environment is taken care of in the problem identification and priority setting process

### **5.2 Sources of Funding**

Budget allocation by government to research is far below the 10% of GDP agreed upon by SADC member states. However, agricultural research in Tanzania is largely funded by loans from financial institutions such as the World Bank, the African Development Bank and other donors either directly or through regional bodies such as ASARECA, SADC and RUFORUM. An assessment on Agricultural Research Delivery of African NARS conducted in 2006, placed Tanzania in the category of NARS that receive modest funding from national governments (estimated at 30%) and receive major part of their funding from donors (above 50%). Government funding is dominantly in the form of salaries, basic infrastructure, and station upkeep.. In the case of SUA, the largest component of the NARS outside the government departments, agricultural research is almost entirely funded by external donors, and in recent years, NORAD has been the major donor.

Regional networks such as ASARECA, IUCEA and SADC have provided funds for research themes in different areas within the five domains but it is difficult to give specific allocation figures for each of the domains. Generally, it can be said that research funds have been received from GoT-ASDP under ZARDEF, CGIAR institutions through collaborative research and bilateral funding to a number of commodity programmes from donor agencies such as USAID, IDRC, the Mcknight Foundation and Bill and Mellinda Gates Foundation. Donor funding

often goes to research programmes that cut across and deal with community problems and/or natural resources. Examples of such programmes include; Cowpea breeding for resistance to *Alectra* (a parasitic weed) in the eastern and central zones through the Mcknight Foundation, funding to the grain legumes project across various zones in Tanzania by the Bill and Mellinda Gates Foundation and cassava research through the Great Lakes Cassava Initiative.

Other research programme have benefited from commodity levies. The government set up various levels of commodity levies to be contributed to research of selected cash crops which include cashew, sugarcane, tobacco, coffee, tea and cotton. This set up is a multilateral agreement with the private sector to help finance research of the crops which are considered vital to the nations' economy. Unfortunately, however, this kind of a funding mechanism is yet to be realized in the livestock sector. In this arrangement, the relevant crop Boards collect the levy and manages expenditure through joint research steering committee.

### **5.3 Research Programmes, Managers and Scientists**

For the purpose of this document research programmes and managers in the three major components of the public sector of the NARS (MAFC, MLD and SUA) and the private sector are presented. Within DRT, research activities are accomplished through a network of 26 agricultural research institutes (ARI) and centres and training institutes in the seven zones with lead institutes (Zonal Research and Training Centres - ZRTC) in each of the zones. Research programmes and scientists for DRT and the research parastatal under MAFC are presented (Table 8). Livestock research and training, is also implemented following the same zonal arrangement and centrally coordinated by DRTE in the MLD. The DRTE similarly accomplishes its tasks through a network of research and training institutes (Table 9).

**Table 8: Research programs managers and scientists in MAFC**

Zone	Department/Institute/Centre	Sections/Programs	Research Manager	Research scientists		
				PhD	MSc/MA	BSc/BA
National	DRT Headquarters	<ul style="list-style-type: none"> <li>• Crops</li> <li>• Natural Resources Management</li> <li>• FSR/Agricultural Economics</li> <li>• Training</li> </ul>	Dr Jeremiah Haki			
<b>Subtotal</b>				4	13	2
Lake	ARI Ukiriguru	Cotton, Roots and Tubers	Dr Peter Kapingu			
	Maruku Research Centre	Banana	Dr Jackson Nkuba			
<b>Subtotal</b>				6	19	11
Southern Highlands	ARI Uyole	Maize, Roots and Tubers, Beans, Agric. Mechanization, pyrethrum	Dr Catherine Madatta			
<b>Subtotal</b>				5	20	16
Northern	Selian ARI	Wheat, Barley, Phaseolus Beans	Dr Ali A. Mbwana			
	Tengeru Horticultural Research Institute	Horticulture, Banana	Mr Samali			
	TPRI	Pests, pesticide analysis, pesticide use, vector borne diseases, plant health and quarantine	Dr BEMA Uronu			
<b>Subtotal</b>				16 (6)*	44 (20)*	31(18)*

Zone	Department/Institute/Centre	Sections/Programs	Research Manager	Research scientists		
				PhD	MSc/MA	BSc/BA
Eastern	ARI Ilonga	Maize, Grain Legumes, Sunflower, Sorghum/Millet, Cotton	Dr Alfred Moshi			
	Mlingano Research Centre	Soil and Water Management and Sisal	Dr Adolf Nyaki			
	KATRIN	Rice	Mr Kibanda			
	CHOLLIMA	Rice, Maize, Vegetables	Ms. Nyambo			
	Sugarcane Research Institute, Kibaha	Sugarcane, Cassava	Mr Juhudi Chambi			
	Mikocheni ARI	Coconut and Biotechnology	Dr Aloyse Kullaya			
<b>Subtotal</b>				17	46	27
Southern	ARI Naliendele	Cashew nuts, Oils Seeds,	Dr S.H. Shomari			
<b>Subtotal</b>				8	4	6
Central	ARI Hombolo	Sorghum and Millets	Mr Chambo			
	Makutopora Research Centre	Viticulture	Mr Leoni.Mrosso			
<b>Subtotal</b>				0	4	3
Western	ARI Tumbi	Agroforestry	Mr. E. M. Shankalwa			
<b>Subtotal</b>				1	7	9
<b>GRAND TOTAL</b>				<b>57</b>	<b>167</b>	<b>115</b>

\*Figures in brackets indicate the number of scientists for TPRI alone

**Table 9: Research Programs managers and researcher and scientists in MLD**

Zone	Department/Institute/Centre	Sections/Programs	Research Manager	Research scientists		
				PhD	MSc/MA	BSc/BA
National	National Livestock Research Institute Mpwapwa	Breeding, nutrition, management, economics,	Dr. R.P. Mbwile	4	7	10
	Central Veterinary Laboratory - Temeke	Animal diseases and disease management	Dr Sachinra. Das	8	13	6
Lake	Livestock Research and Training Institute at Mabuki	Beef cattle and local chickens		0	3	2
Southern Highlands	Livestock Research Institute, Uyole	Dairy Cattle -High Altitude Animal Production (Dip.)/Farmer Training General Certificate/Farmer Training	Dr. P. A. A. Mwakilembe	1	3	2
Northern	Livestock Research Institute, west Kilimanjaro	Dairy cattle -high altitude small ruminants, nutrition, animal health	Dr. F. N. Massawe	2	1	3
Eastern	Livestock Research. Center, Tanga	Dairy cattle -low altitude	Mr J.K. Bee	0	3	4
	Tsetse & Trypanosomiasis Research Institute, Tanga	Animal health, tsetse Trypanosomosis research and control of other pests	Dr A.R. Msangi	3	7	2
Southern	Livestock Research Institute, Naliendele	Goats and traditional chickens	Dr MR Salum	0	3	2
Central	Pasture Research Center, Kongwa	Pasture and Forages	Dr. R.B. R. Msangi	1	0	1
Western (to be established soon)	Livestock Research Institute, Kigoma	Small ruminants, tsetse and trypanosomiasis research/	Mr. Wiston Kitwika	0	1	0
<b>GRAND TOTAL</b>				<b>19</b>	<b>41</b>	<b>32</b>

Research programmes at SUA are centrally managed by the Directorate of Research and Postgraduate Studies (DRPGS) and the programmes cut across all disciplines in the University (Table 10). The research programmes include those coordinated in collaboration with MAFC-DRT, and in many cases a foreign institution is involved.

**Table 10: Cross cutting research programmes and scientists at SUA**

Research Programs	Research Manager	Research scientists		
		PhD	MSc	BSc
Cross cutting in all Faculties, Institutes and Directorates	Prof Jairos Matovelo	236	75	23

Research programmes for the private institutions focus on their mandate crops. The main research focus areas, research managers and scientists are indicated on Table 11.

**Table 11: Research programs managers and researches in private research institutions**

Institution	Research Programs	Research Manager	Research scientists		
			Ph D	MSc	BSc
TRIT	Clonal evaluation, crop and water management, soil fertility management and fertilizer use	Prof Bruno Ndunguru	4	4	4
TaCRI	Variety improvement, coffee management, pulping, processing, curing, liquoring, farming systems	Prof. James Teri	2	3	2
TORITA	Variety development, tobacco agronomy, pest control	Dr Gaudence M. Mitawa	1	0	1

## 5.4 WORKING METHODOLOGIES FOR RESEARCH

### 5.4.1 Priority setting

Within the MAFC and MLD, decentralized system is applied in which the zonal centres plan and implement research in accordance with zonal demands and research priorities identified by stakeholders; a process overseen by the Zonal Steering Committee (ZSC). The ZSC draws members from the research institutes in the zone, local government, regional administration and other relevant stakeholders including farmers and representatives from agribusiness and agricultural development agencies in the zone. 50% of the members are farmers. Research proposals from zonal scientists pass through the Zonal Research Coordinator and the Zonal Technical Committee which organizes the review process which ensures participation of external reviewers before they are endorsed by the ZSC.

The Local Government Reform Programme which decentralized administrative responsibilities to local authorities also paved the way for district councils begin to contribute to agricultural research to the Zonal Agricultural Research Funds (ZARF)

which were established in 1997. Within ASDP, ZARFs have been transformed to become ZARDEFs with the aim of making the research agenda being driven and responding to stakeholder needs. In light of the ASDP, farmer organizations and private sector research organizations are expected to come up with researchable issues and training needs. These needs are then highlighted in DADPs whose preparation will involve representatives from NARS. In addition the ZSCs will adopt the researchable issues and incorporate them into priority zonal research programmes. This process calls for an enhanced corporation between R&T institutions, farmers organizations and private sectors. The latter will be among the potential service providers to provide research service to these researchable issues. The researchable areas will be adopted by NARS and proposals will be submitted to corresponding R&T zones to apply the competitive ZARDEF.

The other institutions in the NARS are guided by their own research policy, where such a policy exists, as in the case of SUA, or by institutional Strategic Plans and/or research objectives as the case of TPRI, TRIT, TaCRI and TORITA. However, in all cases stakeholder participation in all stages of research is emphasized and often research proposals for funding through the institutions have to be accompanied by indications from the targeted community(ies) that the research being proposed has been demanded by the stakeholders (i.e demand-driven)

#### **5.4.2 Collaboration**

In all institutions research collaboration between disciplines and between institutions in the public sector, private sector and NGOs is a priority issue. In many cases research collaboration is a condition in the calls for proposals and the nature of institutions expected to participate is indicated. In ZARDEF, for instance multi-institutional proposals are preferred and partnerships of such nature are a pre-condition. In the TARP II-SUA programme, it was required that projects were collaborative between SUA, DRT/DRTE, farmer groups or NGO and the Norwegian University of Life Sciences, where appropriate. Collaboration is also achieved at the level of public-private partnerships. TRIT, for example collaborates with Kifyuliro Research Centre (a DRT station), tea factories and has even collaborated with the tea industry in Uganda. Hence, collaboration in agricultural research in Tanzania is not a new phenomena.

#### **5.4.3 Research appraisal**

Research appraisal is comprised of periodic internal reviews and monitoring coupled with an annual review process. The internal review process is facilitated by an inter-disciplinary team that makes field visits for verification of information contained in reports submitted to the research management office by the researchers. The other form of research appraisal is the annual review which often takes place in the form of annual review meetings in which stakeholders participate in the review process. In many cases, such annual review sessions would be preceded by the submission of annual reports, by the researchers, to the research management office. Annual reviews are often moderated by an external consultant and the review report

presented to the research management committee for further action. In the case of large research programmes, local and external consultants are often commissioned to conduct in-depth appraisals of the programme concerned. Some of the major publications are indicated on Table 12.

**Table 12: Research programmes' appraisal publications**

Year	Client	Research appraisal publication
<b>Research Appraisal Reports</b>		
2006	FARA	Agricultural Research Delivery in Africa: An Assessment of the Requirements for Efficient, Effective and Productive National Agricultural Research systems in Africa. Main report and Strategic Recommendations
2005	SUA-MAFC	Food Security and Household Income for Smallholder Farmers in Tanzania. Applied Research with Emphasis on Women. Final Report of the TARP II-SUA Project
2005	PhD Thesis (Norwegian University of Life Sciences)	Impact of Agricultural /research: A Study of On-Farm Development Effects of Agricultural Research in southern Highlands and Eastern Zones of Tanzania
2004	World Bank	Implementation Completion Report for the Second Tanzania Agricultural Research Project (TARP II)
2004	ASARECA	Reforms of Agricultural Research and Technology dissemination Systems in Eastern Africa: Tanzanian Experience
2004	SUA/MAFC	The Impact Assessment and Perspectives. The Case of the Project: food Security and household Income for smallholder Farmers in Tanzania. Applied Research With Emphasis on Women
2003	SIDA (Sweden)	Completion of a success story or an opportunity lost? An evaluation of the Soil and Water Conservation Programme in Arusha Region (SCAPA)
2002	MAFC	Review of crop, special (factor) and socio-economics research programmes in the DRD research network
2001	USAID	Reforming Agricultural Research Funding in Tanzania: Toward a Demand-Driven Agenda. Sustainable Financing, Country Study no.4
2001	ASTI (Agricultural Science and Technology Indicators)	Tanzania
2001	Ministry of Agriculture and Food Security	Western Zone Agricultural Research and Development Institute: profile and assessment of current level of client orientation and organizational sustainability
2001	Ministry of Agriculture and Food Security	Central Zone Agricultural Research and Development Institute: profile and assessment of current level of client orientation and organizational sustainability
1997	Ministry of Agriculture and Food Security	Economic impact of Maize Research in Tanzania
1997	MAFC	Review of livestock and socio-economics research programmes in the DRD research network
1994	Royal Netherlands Embassy	Mid-Term review of the National Coordinating Unit and Lake Zone Farming Systems Research Project

## 6.0 MANAGEMENT OF TRAINING PROGRAMMES

### 6.1 On-going training programmes

Institutions of training programmes that eventually produce personnel for agricultural research are managed under MHEST. SUA is a key partner of NARS for the training component where the greater majority of the researchers receive training at the bachelor degree level. Other institutions such as, MUCCOBS, UDSM and MU also offer relevant training programmes to some extent. Training programmes in these institutions are managed through university committees particularly, the Senate and final approval is granted by the relevant University Country (equivalent to a Board of Directors). Relevant training programmes are indicated (Annex 18a-d).

### 6.2 Training publications

Training needs assessment is done to determine relevancy and adequacy of training programmes offered. Such assessment studies also help to orient training to stakeholder needs and priorities. Two most recent studies evaluated the training programs at SUA and the results are being incorporated in a university-wide programme review currently on-going. The publications that came out of the evaluation of the SUA training programmes are indicated on Table 13.

**Table 13: Training publications**

Training publications		
Year	Client	Publication produced
2005	SUA	Job Market Surveys, Training Needs Assessment, Tracer Studies for Undergraduate Degree Programmes (Crop Production Cluster)
2005	SUA	Job Market surveys, Training Needs Assessment, Tracer Studies for Undergraduate Degree Programmes (Animal Production Cluster)

### 6.3 Actual and Potential Demand for Cooperative Relationships Between Research and Training Institutions, Farmer Organizations and Private Sector

Research and training institutions have along history o collaboration in Tanzania. Both public and private institutions as well as NGOs and CBOs have played active roles in training students registered in training institutions. At the same time, research, training and NGOs do develop and implement research projects in collaborate research projects. The potential demand for cooperative relationships is high. On the ground, a number of collaborative activities are already being implemented. On going collaboration is in the following area/activities:

- Public and private research departments/organizations send in staff for long term training at universities;
- Tailor-made short courses are mounted by universities for targeted staff in research institutions;
- Tailor-made short courses are mounted by universities for targeted staff in NGOs and CBOs;
- University students are attached to public or private research centres, NGOs and CBOs for practical training and joint supervision;

- Graduate students at universities conduct their research components for dissertation/thesis at public or private research centres, NGOs and CBOs;
- Staff in research centres serve as External Examiners for university written examinations and moderation of dissertation/thesis for award of graduate degrees, and
- Staff in research centres occasionally invited to deliver lectures at universities on part time basis.

It is also planned that training of stakeholders under the Client Oriented Research/Extension Management Approach (CORDEMA) will involve the private sector (e.g. MVIWATA, PELUM), Universities and research departments in the private sector.

## **7.0 NETWORKING FOR AGRICULTURAL RESEARCH, TRAINING AND DEVELOPMENT**

### **7.1 In-country Research Alliances**

The working relationship between the major NARS components (DRT the DRTE) and the other institutions in the NARS is guided by national policies and mechanisms set for collaboration/participation and monitoring at the levels of research planning, implementation, monitoring and evaluation and publications. For instance, the representation of MAFC in all relevant technical/steering committees and/or Boards of institutions within the NARS family provides an opportunity for the identifying opportunities and creating an enabling environment for creating and/or developing research alliances on researchable issues of mutual interest.

Spelt out functions of the DRT, as an example, require the department to fulfill networking responsibilities:

- Plan, execute and co-ordinate agricultural research and training programmes in Tanzania in accordance with the national agricultural policy and training and research priorities;
- Co-ordinate and integrate agricultural research and training activities with those of other sectors (e.g. livestock, forestry and fisheries and higher learning institutions), through COSTECH.

Research alliances are viewed as a cost effective way of accessing utilizing research funds as the outputs can have wider implications within a country and across countries. There have been many research alliances in the past on the basis of specific commodity programmes (eg maize programme) or programmes addressing a specific agro-ecological zone (eg rainwater harvesting in arid areas). A functional network must have a clearly defined research agenda. On the other hand, collaboration between individual institutions within the NARS and/or institutions within the NARS and other institutions at national and regional level is very largely dependent on conditions laid down in the articles or documents spelling out the nature of collaboration or alliance. However, based on previous experiences,

cooperative arrangements that tend to facilitate a win-win situation are those which involve all stakeholders at all stages of planning, implementation, and monitoring and evaluation.

Through self initiatives, and sometimes with donor pressure, universities, ARIs, LRIs, NGOs and CBOs have established research linkages by developing, implementing, managing, monitoring research projects. In some cases, formal alliances have been established. SUA-MAFC developed an MoU for collaborative link in research and training. The MoU, initiated in 1993 and now in its third/fourth phase makes provisions for joint research, joint training of research staff and joint publication of research results. However, alliances with other member institutions of the NARS are not always formalized to the same extent.

At the farmer level, members of farmer networks and NGOs under MVIWATA and PELUM, respectively, facilitate linkage with agricultural research organizations. Farmers are organized and they are able to articulate their needs thus enabling research institutions to function in a manner that is client-oriented and demand-driven. Such groups which can be self initiated, or initiated with support from government services, agricultural R&D projects, NGOs, commodity-based farmers' groups or producers' associations provide an opportunity for on-farm research or adaptive research. Networks play an important role in innovation and linking up members with actors relevant to rural development and agricultural innovation, at national and international levels

The existence of the collaboration between different institutions in the NARS involves different players at different levels. Examples include:

- Joint publication of TAJAS (Tanzania Journal of Agricultural Sciences)
- Joint preparation and implementation of the NORAD-funded TARP II-SUA project (2000 – 2005) for joint implementation of research and training which also, incorporated extension staff under LGAs,
- Joint membership in committees responsible for managing TARP II-SUA and TAJAS,
- Postgraduate research and undergraduate field practical attachment at ARIs
- On-farm research carried out jointly by DRT researchers, extension services, NGOs, CBOs, and village governments,
- Collaboration between private research institutes eg TRIT with Kifyulilo Research Centre under DRT and village governments for implementation of on-farm research, and
- On-farm seed production (Quality Declared Seed) through joint efforts of research, extension and LGAs.
- Implementation of research under The Zonal Agriculture Research and Development Fund (ZAREDF), currently in progress, is collaborative and seeks involvement of various institutions within NARS (examples: within DRT institutions; between DRT and other public institutions such as

Universities; between DRT and NGOs/CBOs and between institutions outside DRT)

## **7.2 Research Alliances and Networks across SADC and with International Research Institutions**

Networking and creating alliances is provided for in the functions of the DRT and the DRTE and the same applies to universities, private research institutes, NGOs, CBOs and LGAs. Examples of international networks currently collaborating with institutions of the Tanzania NARS include CYMMIT, ICRISAT, IITA, CIP, CIAT, WARDA, ICRAF

The need for research networks serving SADC:

- Capacity building and training through joint research, training or exchange of both staff and students
- Movement/borrowing of human resource and/or exchange of experts in specific fields where some countries may have a deficiency
- Sharing of knowledge and information to minimize overlap and duplication of efforts
- Sharing of infrastructure (laboratories, ICT facilities, expertise) and programmes to build capacity and enhance efficiency, and
- Joint publication and ownership (Intellectual Property) of innovations

However, a conducive collaborative environment within the SADC would require that programmes are developed with the full involvement of all stakeholders and they are conceived elsewhere and imposed upon for implementation. However, some level of harmonization of policies and operational procedures within the different countries would have to be reached before any meaningful collaboration can be achieved. Some of the issues that may need to be resolved include a regional strategy on basic research, research with GMOs, training needs and other issues of common interest. For effective collaboration within the SADC region, member states would need to identify common needs which can be solved more cost effectively through collaborative efforts. This may require that the priority research and training needs in each member state are identified, harmonized and a consensus reached on priority problems of a regional nature. It would then make sense that member states with a comparative advantage, without underestimating the need to develop capacity in the other states, collaborate in the planning and implementation of regional programmes so identified

## **7.3 Needs for Research Networks Serving SADC Priorities**

Research networks provide opportunities to pool resources (financial, physical and human) for effective implementation of research on problems of common interest. Commodity research programmes being undertaken in Tanzania are not very different from research programmes in other SADC member states. Hence, Tanzania can benefit by collaborating in efforts to determine research needs of a regional nature and making available its own resources in collective efforts, through

networks. Given the fact that Tanzania has been involved in other networks of regional nature such as ASARECA, RUFORUM, VicRES, and including SADC, the need for networks within SADC is even greater now as the global trends are towards regionalization.

## **8.0 OVERALL DISCUSSION AND CONCLUSIONS**

### **8.1 Policy Framework**

Since 1986, Tanzania embarked on policy and institutional reforms, the main objective being, to revamp the national economy in order to combat poverty and improve peoples' welfare in order to facilitate wholesome growth. Policies such as NSGRP, Vision 2025, RDP, and programmes such the ASDS and the local government reform programme were developed in the context of the Highly Indebted Poor Communities (HIPC) initiative to concentrate funds which would have otherwise been spent on debt repayment, to funding programmes in five core sectors which are education, health, water, rural roads and agriculture. The ALP (1997) was developed in the same context as an improvement to the Agriculture Policy of 1983.

A key issue in the ALP which was later re-enforced in the ASDS of 2001 was for the MAFC to delegate responsibility for funding export crops research to the private sector and the need to promote and place emphasis on demand-driven, result-oriented agricultural research within the research departments and zonal research centres of MAFC and MLD, private research institutes and SUA. Significant progress has been made in some areas but a lot still needs to be done. For instance, private research institutes were established first for tea and then coffee and tobacco but these are only a small proportion of a long list of potential cash crops that include cotton, sugarcane, cashew, sisal, pyrethrum, spices, etc. On the other hand, developing and implementing demand-driven research programmes requires that farmers are organized and empowered to be able to conceptualize researchable problems and raise their demands for specific research. This situation can be reversed if existing farmer organizations, through organized networks such as MVIWATA, PELUM, are assisted and facilitated to grow and serve as a voice for raising issues with R & D institutions.

The economy of Tanzania is highly dependent on agriculture and the agricultural sector is dominated by small-holder subsistence farmers who constitute over 80% of the total population. Current trends indicate a fairly rapid expansion of urban areas and emigration of people from rural to urban areas. Hence, the balance is likely to change in the next 5-10 years. However, agriculture has strong linkages with non-farm sectors through agro-processing, transportation, urban markets, and export trade. Trends in poverty reduction are highly dependent on growth of agriculture and related activities. Although significant progress has been made as a result of the structural reforms, the achievements have not been significant and/or visibly beneficial to the majority of Tanzanians, particularly those living in rural areas who

are almost wholly dependent on agriculture for their livelihoods. However, these reforms and structural adjustments have provided a basis for public/private sectors' partnerships in service delivery particularly input supply, marketing of produce and rural financing to stimulate agricultural growth and reduce rural poverty.

## **8.2 Research Organization and Coordination**

The current organization of research at zonal level facilitates administration and management of research programmes and offers opportunity for stakeholder participation. However, since the commodities being addressed (crops or livestock) are not specific to zones, research programmes on similar commodities in several zones cannot be avoided. On the other hand, the established private research institutes concentrate largely on the crop commodity within their mandate. For these institutions, addressing stakeholders' needs' is a priority for continued existence and contribution of funding. Sugarcane research, though not fully privatized, is similarly benefiting from contribution by the sugarcane industry.

Universities almost entirely rely on external funding for research but partnerships with institutions under MAFC, MLD or other institutions can be formalized through MoUs. However, in the absence of a common pool of funds from which both partners can draw, such partnerships and linkages are difficult to implement. Along the same premises, the coordination of research in different institutions is made difficult because institutions have to adhere to specific requirements laid out by the donor of research funds. In the final analysis, therefore, coordination of research may have to be modified to accommodate donor conditions.

The NARS does exist but lacks a clearly defined national fora for harmonization and coordination and including the need to make decisions on research of strategic importance to the country. This essentially means that the current mechanisms for coordination of the NARS is weak.

## **8.3 Training**

The Sokoine University of Agriculture (SUA) is the second largest component of the NARS in Tanzania. SUA is a semiautonomous institution under the MHEST with a mandate in training, research and technology development and transfer. At the moment, SUA is the leading institution of higher learning which offers training to the largest number of professionals with the minimum professional qualifications (B Sc) which is necessary for one to be designated as a researcher. However, the UDSM which offers training in general and biological sciences and social sciences, is a significant contributor to the pool of researchers within the NARS, and to some extent MU and MUCCOBS. Training at university level is regulated by the Tanzania Commission for Universities (TCU) established in 2005 in line with the requirements of the Higher Education Policy (1999). TCU serves regulatory functions to ensure legality and quality of education offered by higher institutions of learning. Future collaboration in training could be based on the concept of comparative advantage,

but the requirements of university training regulatory bodies, where and if they exist in the different member states, have to be taken on board.

#### **8.4 Local and regional research alliances**

At the national level, there are deliberate efforts to encourage regional alliances between research, training and other civic organizations in matters of research, training and extension. The research zones as well as universities have established partnerships with NGOs and CSOs based on the understanding that agricultural research centers are a reliable source of agricultural technologies, and likewise, that the NGOs and CSOs can help mobilize its members to participate in technology generation and adoption. Hence alliances are vital for the success of research and training programmes. Such alliances also have benefit at regional level as they help maximize on the capacity available, create opportunities for collaborative approach to common problems and can help make effective use of limited resources. However, guidelines for establishing such alliances and partnerships have to jointly developed and adopted across the region.

#### **9.0 Conclusions**

- The NARS in Tanzania cuts across several Ministries and institutions but lacks a strong national coordination mechanism to improve effectiveness
- Considering the entire NARS, Tanzania has considerable capacity in terms of research centres and trained personnel.
- There exists opportunities for public and private research and training institutions to work together with NGOs and CBOs
- There is a sufficient level of organization at the NGO (eg PELUM-Tz) and CBO (MVIWATA) level to support further dialogue and collaboration in matters of research and training
- Tanzania has in place, a wide variety of high level training programmes at bachelors to PhD levels but programmes of regional nature can be more beneficial in the long term for raising capacity within the SADC region

## **Bibliography**

- FARA. 2006. Agricultural Research Delivery in Africa: an Assessment of the Requirements for Efficient, Effective and Productive national Agricultural Research systems in Africa. Main Report and Strategic Recommendations.
- National Strategies and Ministerial Policies – Attached as Annex 2-18 in a separate volume of this document.
- Shao, F.M. 2007. SADC Multi-country Agricultural Productivity Programme (SADC MAPP). Analysis of the Agricultural Technologies Development and Dissemination situation in Tanzania.
- URT. Ministry of Agriculture Food Security and Cooperatives. Agriculture Extension Policy. First draft, 2006.
- URT. Ministry of Agriculture Food Security and Cooperatives. Medium Term Strategic Plan 2007-2010. Final Draft, February, 2007.
- URT. National Bureau of Statistics. 2006. National Sample Census of Agriculture (2002/2003), in Small Holder Agriculture Vol. III (Livestock Sector) National Report. First print July 2006.
- URT. National Bureau of Statistics. 2006. National Sample Census of Agriculture (2002/2003), in Small Holder Agriculture Vol. II (Crop Sector) National Report. First print July 2006.

## Persons Consulted

<b>Name</b>	<b>Title/Role</b>	<b>Organization</b>
Dr Rose Kingamkono	Ag. Director General	COSTECH
Dr Ladislaus Nsubemuki	Director General	TAFORI
Dr Amon Z. Mattee	Professor, Department of Agricultural Extension	SUA
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Dr David Sendalo	Assistant Director, Livestock Research	MLD
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## ANNEXES

### **Annex B (i): Implementation and Coordination of Agricultural Research and Training in the SADC Region (ICART) (9 ACP SAD 001)**

Consultancy to assist the ICART project by undertaking supplementary gathering and compilation of information in the context of a situation analysis of agricultural research and training in the SADC Member State of The United Republic of Tanzania

#### **Terms of Reference**

##### **1. BACKGROUND**

The programme *Implementation and Coordination of Agricultural Research and Training* in the SADC Region (ICART) is a regional agricultural research and training program operating under the auspices of the Food, Agriculture and Natural Resources Directorate (FANR) of the SADC Secretariat, responsible for the coordination of the agricultural research and training programs. ICART's overall objective is to contribute to regional economic growth and poverty alleviation by organizing within the SADC region innovative agricultural research and training activities to promote sustainable use of natural resources. This will lead to increased agricultural production through application of improved technologies, and the implementation of policies that will enable resource-poor smallholders to achieve improvements in their livelihoods. Research findings and the training of researchers and professionals will contribute to the creation of an enabling environment for all stakeholders in agricultural production, thus improving both the food security and economic status of the countries concerned.

In the context of ICART, agriculture is understood to include crop production, animal husbandry and the gathering of biological products, together with the sustainable exploitation of natural resources used in agriculture and the latter's impact on the environment. 'Agriculture' also encompasses agricultural economics and policy making, rural livelihoods and the social issues of farming that affect farmers, herders and gatherers.

The programme is designed to enable national agricultural research programmes, and *National Agricultural Research Systems (NARS)* where they already exist (involving public sector research and training institutions in agriculture, private sector research and technology generation companies, and professional agricultural organisations) to generate through empirical means innovative solutions to:

- i) strengthen both in-country and regional cooperation in order to increase agricultural production, productivity and quality
- ii) improve incomes of small-scale farmers and profits for processors, traders and other beneficiaries, while maintaining the natural resource base.

Where NARSs do not currently exist, specific recommendations will be made to promote the concept, and formally establish them.

As part of the activities of the ICART project, a four-phase Situation Analysis is being implemented in order to identify, appraise and assess constraints, and recommend support strategies for existing National Agricultural Research Systems, and for research networks servicing agricultural production and rural development in the SADC region.

Phase 1 of the Situation analysis consisted of a desk study of information available at the SADC Secretariat and through the Internet. Phase 2 consisted of four consultants effecting country visits to establish a rapid appraisal of the institutional set up within SADC Member states and

establish a preliminary comparison of the 14 member states, based on their short visit. Phase 3 consists of gathering information through national consultants to supplement the Phase 2 information gathering process and to produce country reports. Phase 4 will consist of reviewing the country reports and other material gathered on networking initiatives in the region to produce a regional synthesis of Agricultural Research and Training in the region, as well as draft a strategy document for the support to regional networks for the SADC Secretariat. The current consultancy is to carry out the Phase 3 component in each SADC Member State by a Consultant, most likely, a University in the Member State.

Every government of the 14 Member States of SADC is expected to have established an **agricultural policy**, which is to be implemented through medium term agricultural and rural development plans. It is important to establish the existence of such a document and whether an agricultural research policy and corresponding action plan have also been developed in every Member State

- The essence of the Situation Analysis is to establish the following:
- Status of NARS in Member states
- Status of national and regional agricultural research and training networks
- Data gathered should enable an analysis of the mandates and working means of the existing research institutions; the implementation of **on-going research programmes the system of institutions** established for delivering those programmes types of support required for further development of research and training networks

## 2. DESCRIPTION OF THE ASSIGNMENT

- Global objective

The global objective of the consultancy is the implementation of the Dar-es-Salaam Declaration in Agriculture and Food Security for the SADC Region.

- Specific objective(s)

The specific objective of the consultancy is to assist the SADC Secretariat to establish capacity for coordinating agricultural research networks in the SADC Region.

- Beneficiaries

The direct beneficiary of the assignment will be the SADC Secretariat. The consultancy described below will provide the SADC Secretariat and the EC Delegation with sufficient enabling information to help lay the foundation for preparing and launching programme activities in support of regional research and training programmes, and the later establishment of a regional agricultural information system.

- Requested services, including suggested methodology

The consultant, in consultation with the ICART National Focal Point, will identify a small team of individuals with a Team Leader, with competencies to carry out data gathering on the national Agricultural Research and Training system, carry out some analysis of the information and to write up a comprehensive report thereon, according to an agreed format. The ICART National Focal Points and the Team Leaders from Member States will attend a briefing session prior to the start of the assignment to harmonise the approach to implementation, the format of the Country Report and the method to validate the report at country level. The consultant and the team will work in close co-operation with the ICART National Focal Point, the ICART Project Coordination Unit and the SADC Secretariat.

The consultancy will gather information on and appraise agricultural research *systems* (research AND related basic and in-service professional training) and their *programmes*, covering the

following five domains:

- agricultural economics, policies, trade analysis;
- production-to-consumption chains, for example agri-business and agro-processing;
- social issues in agriculture (for example land rights, food security, migrations, impact of health on agriculture, rural credit, extension and education, social capital, farmers' organisations);
- biodiversity in agriculture (for example variety selection and breeding, and biotechnologies);
- farming systems (including mechanisation; risk management; pest and disease management; input use; innovative systems that lead to improved productivity per unit of labour, water and land; and the relationship between land and water use, agriculture & the environment).

Specifically, Phase 3 of the consultancy will consist of gathering information, through a mixture of desk research and interviews on the following 12 issues:-

- 1 Assessing with the relevant Ministries the policies for research and training in agriculture
- 2 Identify relevant private sector organizations and their research needs
- 3 Establish the list of registered institutions/ organizations delivering agricultural research
- 4 Establish the list of registered Institutions/organizations delivering high level training and in service professional training in agriculture
- 5 Assess with the Ministries the formal existence of NARS and the monitoring mechanisms, the contribution of research stakeholders
- 6 Provide charts indicating institutional structures
- 7 Documenting the working methodologies for research / the NARS
- 8 Identify actual and potential demand for cooperative relationships between research & training institutions and the farmers' organizations & private sector
- 9 Document and appraise in-country research alliances
- 10 Describe & contextualise research alliances (& the programmes they address) across the SADC region
- 11 Describe & contextualise cooperation with foreign/ international research institutions
- 12 Identify the needs for research alliances and networks. The consultant will also advise on the approach to be used for the gathering of information on the following 8 issues listed below, and in case of easy accessibility of such information, provide such information in the annex of the report:
- 13 A detailed description of action plans (programs) and planning mechanisms within the list of 5 domains given in the TORs
- 14 Documentation on the sources of funding for research and comparison of budgets among the 5 domains
- 15 A compiled list of research managers and scientists
- 16 Documentation on the evaluation of impact from research programs
- 17 Identification of major agricultural research publications
- 18 Documentation on existing appraisals of research per country or institution
- 19 Documentation on appraisal of on-going training programmes
- 20 Identification of major training publications

The general method proposed for the implementation of the Situation Analysis are as follows:

Step 1: Identify and collect the policy documents or the policy orientation with the appropriate resource persons in the Ministries and assess how the implementation of those policies was planned in every Research and Training institution.

Step 2: Produce organizational charts of the institutions, including their relationships with the Ministries, and analyze how this institutional set up is managed as a NARS.

Step 3: Identify the following:

- i) existing cooperation mechanisms with research stakeholders
- ii) cooperation mechanisms between research institutions, between training institutions and between training and research institutions at country level,
- iii) cooperation between institutions in diverse SADC Countries,
- iv) cooperation with foreign institutions and through international networks,
- v) needs and demands for further cooperation through network

The detailed steps and activities proposed for the data gathering and analysis processes are described in Annex B(ii).

The ICART PCU will make available all documents and electronic data sources gathered through the previous phases of the situation analysis as well as from other studies recently carried out by projects of the SADC FANR Directorate, and obtained elsewhere, to the consultant. This will facilitate the process of identifying gaps in the data gathered so far and will guide the gathering of supplementary information. The briefing workshop carried out at the start of the assignment with the Team Leader and the ICART Focal Point, together with the ICART PCU will aim to ensure a clear understanding of the task at hand, the expected output of the consultancy, and the scope of work possible achievable.

The ICART PCU will be monitoring the process, providing any assistance through electronic means. It may also carry out visits to some of the Member States to assess the process.

Upon submission of the draft report to the National Focal Point, the Consultant and the National Focal Point will facilitate the process of validation of the report, which would have been agreed upon at the Briefing Meeting. Part of the expenses for the validation process would have been included as part of the services of this contract. Part of the expenses for the logistics of the meeting will be met by the ICART project, through facilitation by the National Focal Point. The proposed approach for validating the report is through a workshop with members of a 'readingpanel' made up of key stakeholder representatives of the NARS, which will meet with the consultant, under the chairmanship of the National Focal Point, to provide its views collectively. The validation process will be carried out in a timely manner such that the comments of the 'reading panel' will be incorporated in the Final Draft report and submitted to the Contracting Authority through the ICART National Focal Point by the 18<sup>th</sup> of January 2008.

### 3. EXPERTS PROFILE

- *Number of requested experts per category*

The team required to address the complementary data gathering phase of the Situation analysis will comprise of an agricultural scientist as the Team Leader and other experts as deemed necessary in the national context.

- *Profile required (education, experience, references and category as appropriate)*

**Team Leader:** Masters level qualification, with at least 5 years professional experience **Other experts:** At least Degree level training with at least 3 years professional experience **Working language(s)** English, French or Portuguese, as appropriate per Member State (though see Section 5 on 'Reporting'). Translation of the final report into English will be required.

### 4. LOCATION AND DURATION

- *Starting period*

22<sup>nd</sup> November 2007

- *Foreseen finishing period or duration*

It is estimated that the consultancy will require 30 person-working days spread over a period of 6 calendar weeks between mid November 2007 and mid January 2008. The proposed date of submission of a draft report to the ICART National Focal Point for validation purposes is at latest 10<sup>th</sup> January 2008 and the draft final report by 18<sup>th</sup> January 2008.

## **5. REPORTING**

- *Content*

The final report will be formatted as will have been agreed by all national consultants at the Briefing meeting. The report will include a brief introduction to the assignment, the method(s) used in its implementation and describe the output of the assignment.

Approval of the report by the ICART PMU, and endorsement by the Director, FANR will be required prior to payment of the accompanying invoice. The Terms of Reference of the mission, and comments on the latter or the process (if any) should also be included in the final report as an annex.

- *Language*

All reports submitted to SADC Secretariat, Gaborone, will be in English, French or Portuguese.

### *Submission/comments timing*

The electronic form of the report shall be submitted at the end of the consultancy. The SADC Secretariat shall comment within 20 days of receipt of the draft report. The consultant should incorporate comments from the SADC Secretariat, and submit the Final Report no later than 5 days from receipt of the comments. Deadlines for submission of documents by the consultant will be strictly adhered to. The Contracting Authority (SADC Secretariat) reserves the right to have the reports re-drafted as many times as necessary to bring them to the required standard. If no comments are received from SADC/ EC Delegation within the notification period stipulated above, the draft report may be resubmitted as final.

### *Number of report(s) copies*

ONE hard copy and ONE electronic copy of the Final Report shall be submitted to the SADC Secretariat. Any background documents or databases used in the implementation of the study, that is considered useful for the ICART project may be submitted in electronic format, with the final report. All correspondence, communication and reporting will be in English, French or Portuguese on A4 paper, using Word and Excel formats. The cover page for all reports will carry the date of submission of the report, and in brackets the mission dates. Repetitions will be avoided and replaced by a cross-reference to the relevant section(s). The first page of each report will carry the following disclaimer "The authors accept sole responsibility for this report drawn up on behalf of the Regional Authorising Officer of SADC Secretariat. The report does not necessarily reflect the views of the SADC Secretariat, nor of the European Commission".

## **Annex B(ii): Detailed Activities Proposed to Gather Information and Analyse the 20 Pertinent Issues on a Regional Basis**

*(Bullet points starting with 'Eventually' are ultimate goals of the study, which will also need to be addressed to a certain extent during this consultancy)*

### ***Point 1: Assessing with the relevant Ministries the policies for research and training in agriculture***

- Establish the availability of policy and strategy documents on agricultural development and rural development in the Member States
- Analyze priority setting for agricultural research and how it is developed into an agricultural research policy and corresponding strategy per country.
- Eventually lead to common priorities identified, but also ranked; these elements are essential for the design of the strategy to support research networks.
- Establish the training policies and strategies in agriculture.
- Identifying the usefulness for support to networking among training courses
- Eventually lead to identification of priorities for supporting existing training programmes at country level.

### ***Point 2: Private sector organizations, their research needs and their role in Research and Training***

- Establish relationships between the various stakeholders in agriculture: research institutions in the one hand and the farmers' organizations, the private sector and the NGOs operating in agriculture.
- Visit relevant institutions of the civil society for appraising the issue.
- Establish the readiness of those partners to participate in the design and monitoring of the research programs and of the management of the research institutions at NARS level.
- Establish the readiness of those partners to participate in the design of in service training to satisfy their needs.
- Identify their analysis of the impact of research on agriculture and rural development
- Identify with them what should be improved, particularly through different ways of implementing research networking.

### ***Point 3: Establish the list of registered institutions/ organizations delivering agricultural research***

- Provide full list of agricultural research institutions and other institutions providing agricultural research and their administrative relationships to ministries and other bodies
- (Association of Farmers' Organizations, Association of Industries or servicing firms,
- Association of NGOs)
- List with short description of mandates

### ***Point 4 - Establish the list of registered Institutions/organizations delivering high level training and in service professional training in agriculture***

- Provide full list of agricultural Training institutions and other institutions providing agricultural research and their administrative relationships to ministries and other bodies
- (Association of Farmers' Organizations, Association of Industries or servicing firms,
- Association of NGOs)
- List with short description of mandates

***Point 5: Address with the Ministries the formal existence of NARS and the monitoring mechanisms, the contribution of research stakeholders.***

- A NARS is an operational system established for enhancing the scientific and technical delivery of research in agriculture within which effective coordination between all research institutions or research implementing institutions is organized through monitoring bodies representing the research stakeholders.
- What are the existing coordination systems
- Establish the existence and monitoring methods for the NARS.
- Identify those monitoring bodies in the country that designate responsibilities and cooperation for research programs and arbitrate the provision of public funding to the programs.
- Document examples of evaluation of the programs of the research institutions and their aggregation for policy decisions
- Document views and recommendations on the institutional creation or development of a NARS so that every relevant institution or organisation could be accommodated within it
- Eventually enables policy makers to address the development of human resource in the participating institutions in order to support the implementation of the programmes
- Eventually a compilation of this analysis at SADC level would indicate need for support to programme planning and supervision, in particular through the promotion of national and regional networks.

***Point 6- Provide charts indicating institutional structures and relationships***

- Establish a chart describing the interactions between institutions in the research system and the training
- An analysis of the research institutional framework in the Member State on the efficiency, focus and effectiveness of agricultural research in general
- Eventually establish potential for regional cooperation on agricultural research.

***Point 7: Document the working methodologies for research***

- Priority setting
- Funding mechanisms
- Collaboration

***Point 8: Identify actual and potential demand for cooperative relationships between research and training institutions and the farmers' organizations and private sector***

- Use of research findings in the curricula for high level training in agriculture, and researchers' involvement in training seem to be rather poor. We consider that the Document examples of involvement of high level professionals from the private sector and from farmers' organizations (from public administration as well) in training and research institutions
- Document their involvement in providing practical experience on decision making, planning and implementation of development and production programs.
- Eventually identify best practices for cooperative relationships between stakeholders for developing training in agriculture that could be further spread through SADC.

***Point 9 - Appraise in - country research alliances***

The joint contribution of several institutions and partners on a research program is crucial for success. Document and analyse in- country research alliance in the domains of research described above.

- Research within production to consumption chains involving all stakeholders (the innovation chains approach

- Promotion of research on social issues in agriculture that should be developed through effective partnership (involving farmers' organizations, service sectors in agriculture and particularly the banking sector and NGOs)
- Eventually develop proposals for linking existing in-country cooperation at regional level
- Biodiversity in agriculture. Issues of land use planning, maintenance of natural or artificial habitats, conservation areas, the introduction of GMOs are all important tools for maintaining the required biodiversity in agriculture.
- Eventually, develop proposals for developing or reinforcing cooperation at regional level on the issue.
- Research on farming systems and livelihoods, which should systematically include an analysis of relationships between those farming systems and those livelihoods in the one hand and the natural resources and the environment in the other
- Eventually identify successful in-country cooperation that can be up- scaled at regional level.

***Point 10: Describe and contextualise the research alliances developed across the SADC region***

- Identification of existing alliances, describing the rationale and subject matter, the source of funding, institutions and number of researchers involved
- Assess if the alliances constitute a mature existing and functional network, or a non-performing network
- Identification of expectations for new alliances

***Point 11: Describe and contextualise the cooperation with foreign international research institutions***

- Generally, cooperation ties exists between national research institutions and foreign research institutions in Europe, America, Canada, Australia, China, India etc.
- Document and appraise the relevance and effectiveness of networks developed in the region.

***Point 12 - Identify the needs for research alliances and networks***

Propose research networks that would encompass existing research programmes and facilitate regional integration.

***Optional Phase 3 Data Collection - Advice on approach to data collection to be included in report. Gathering of information if easily accessible.***

***Point 13: Provide a description of action plans (programs) and planning mechanisms using the list of 5 domains given in the TORs***

Domains in which to carry out appraisals of the action plans and programs of the institutions composing the NARS by the consultants:

1. Agricultural economics, policies and trade analysis;
2. Production to consumption chains, for example agri-business and agro-processing;
3. Social issue in agriculture (for example land rights, food security, migrations, impact of health on agriculture, rural credit, education and extension, social capital, farmers' organizations);
4. Bio-diversity in agriculture (for example variety selection and breeding and biotechnologies)
5. Farming systems (including mechanization; risks management; pest and disease management; input use; innovative systems that lead to improved productivity per unit of labour; water and land; the relationship between land and water use; agriculture and the environment);

- Those five domains reflect the need to review the NARS from a system-wise basis; that the review should put emphasis on the economic and social evaluation of the running research programs. The review of the programs should study organizations and systems and their relationships to natural resource and markets rather than commodities in terms of yields and quality only.
- The analysis to focus on farmers and farming, and on the improvement of production to consumption chains.
- Describe relationships between production systems and natural resources and the environment.
- Eventually compare what is under development in all Member States for the 5 domains of research, and how further development was planned.
- Such analysis will guide support action for on-going developments in line with promotion of social chains of stakeholders, improved risk management, improvement of the productivity of labour and income; improvement of the competitiveness, supporting production systems and decision making processes.
- Eventually indicate how the development of cooperation between similar research programs in the Member States could be facilitated.

***Point 14: Document the sources of funding for research and comparison of budgets among the 5 domains***

- Currently, Governments pay for the core costs of public research institutions (buildings and recurrent costs, administration costs) and for the implementation of programs which are serving their expectations for research outputs. The private sector is also supporting core budgets for private research institutions. In addition, governments and other sponsors (donors) pay for research programs, and are also partly contributing to core budgets for infrastructures and equipments.
- Identify the relative importance of government funding to the financial support of the different research programs;
- What kinds of programs the private sector, the donors and eventually the stakeholder are supporting.
- The distribution of the support from government, donors and other stakeholders for programs as they vary from country to country.
- Eventual analysis enables identification of what counterpart funds could supplement cooperative programmes.

***Point 15 - Compile a list of research managers and scientists***

- Document on-going research programmes and their managers
- Eventually identify how the critical mass of researchers could be reinforced through joint programs and support through networking.
- Eventually identify the urgent need for reinforcing capacity for important programs,

***Point 16 - Document the evaluation of impact from research programs***

- Document effective participation of stakeholders for all kinds of programs generating innovations.
- Appraise the degree of partnership developed in the research programs.

***Point 17 - Identify and collect major agricultural research publications***

- Programs generate major publications, while individuals generate basic publications within the programmes; SADC more interested in the former.
- The publications will help to further analyze the efficacy of the programmes and the potentials for networking those national programmes.

***Point 18 - Document existing appraisal of research per country/ institution***

- All research programs, all research institutions and National agricultural research systems should be regularly evaluated as part of the planning process
- Document these evaluation procedures and results
- Eventually to analyze the on- going process for such evaluation in every Member State and identification areas where improvement can be supported to generate a common evaluation framework for the region

***Point 19 - Appraise on going training programmes***

- Document existing BSc, MSc and PhD in the various training institutions of Member States, and a brief presentation of the content of such training
- Identification of existing partnerships
- Eventual analysis of convergences and differences of training policies between the Member States on which integration could be built
- The compilation of Higher education training can be carried out via a web search of Universities in the region.

***Point 20 - Identify major training publications***

- Document publications on the organisation of Training (Priority setting; needs analysis etc.)

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