

Revised Draft



SADC Multi-country Agricultural Productivity Programme (SADC MAPP)

***ANALYSIS OF THE AGRICULTURAL TECHNOLOGIES AND
DISSEMINATION SITUATION IN MALAWI***

Revised draft consultancy report

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ACRONYMS:

ADC	Area Development Committee
ADP	Agricultural Development Programme
AIDS	Acquired Immuno-Deficiency Syndrome
ARET	Agricultural Extension Service Trust
ASP	Agricultural Services Project
ASSMAG	Association for Smallholder Seed Marketing Action Group
ATCC	Agricultural Technology Clearing Committee
CAADP	Comprehensive Africa Agricultural Development Programme
CIAT	International Centre for Tropical Agriculture
CGIAR	Consultative Group on International Agricultural Research
CNFA	Citizen Network for Foreign Affairs
CISANET	Civil Society Agriculture network
CONGOMA	Council of Non-governmental Organizations in Malawi
CREMPA	Central Region Milk Producers Association
CT	Commercial Trainer
DAC	District Agriculture Committee
DAECC	District Agricultural Extension Coordination Committee
DAES	Department of Agricultural Extension Services
DAESS	District Agricultural Extension Services System
DAHI	Department of Animal Health and Industry
DARS	Department of Agricultural Research Services
DCP	Department of Crop Production
DLRC	Department of Land Resource Conservation
DTC	Day Training Centre
DCGT	Dwangwa Cane Growers Trust
ESSD	Environmentally and Socially Sustainable Development Network
FAAP	Framework for African Agricultural Productivity
FARA	Forum for Agricultural Research in Africa
FRIM	Forestry research Institute of Malawi
FUM	Farmers Union of Malawi
GDP	Gross Domestic Product
HIV	Human Immuno-Deficiency Virus
ICRAF	International Centre for Tropical Agriculture, International Centre for Research in Agroforestry
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
HIS	Integrated Household Survey
IITAI	International Institute of Tropical Agriculture (IITA)
LGB	Large Grain Borer
MACE	Malawi Agricultural Commodity Exchange
MAFS	Ministry of Agriculture and Food Security
MAPP	Multi-country Agricultural Productivity Programme
MBG	Milk Bulking Group
MCCCI	Malawi Confederation of Chambers of Commerce and industry
MDG	Millennium Development Goals

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MGDS	Malawi Growth and Development Strategy
MIWD	Ministry of Irrigation and Water Development
MRFC	Malawi Rural Finance Company
MZCPCU	Mzuzu Coffee Planters Cooperative Union
MSV	Maize Streak Virus
MVAC	Malawi Vulnerability Assessment Committee
NARS	National Agricultural Research System
NEPAD	New Partnership for Agricultural Development
NGO	Non-governmental Organization
NRCM	National Research Council of Malawi
OPC	Office of the President and Cabinet
RTC	Residential Training Centre
RUMARK	Rural Agricultural Market Development Trust
SADC	Southern African Development Community
SARRNET	Southern Africa Research on Roots and Tubers Network
SMS	Short Message Service
STA	Smallholder Tea Authority
TLC	Total Land Care
VDC	Village Development Committee

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EXECUTIVE SUMMARY

The situation analysis was initiated by the SADC Secretariat (Food, Agriculture and Natural Resources Directorate [FANR]) in order to make a contribution to the design process of the SADC Multi-country Agricultural Productivity Programme (MAPP). SADC MAPP seeks to enhance the productivity of agriculture in the member states through support to technology generation and dissemination institutions. Thus, the situation analysis dwelt on understanding the various stakeholders and their roles within the agricultural sector of Malawi.

In order to accomplish the task, the work involved consulting a number of stakeholder institutions dealing with agricultural technology generation and transfer. These consultations were done with the public, private, NGO and farmer institutions. In total, thirty-six (36) organizations were contacted for discussions on operations relating to technology generation and dissemination.

Within the Ministry of Agriculture, all technical departments were consulted viz: Agricultural Research Services, Agricultural Extension Services, Animal Health and Industry, Crop Production and Land Resources Conservation. The Department of Irrigation Services under the Ministry of Irrigation and Water Development was also consulted. The government bodies shoulder various important responsibilities with Department of Agricultural Research focusing on research work (mainly for the smallholder farmers); whilst the other departments undertake the technology dissemination functions, each focusing on a specific area. In addition the government bodies do carry out the regulatory and advisory services to ensure conformity with existing laws of the country.

The international research bodies (members of the Consultative Group on International Agricultural Research) represented in Malawi were also part of the consultative process. In total four of these namely International Crops Research Institute for the Semi-Arid Tropics, International Centre for Tropical Agriculture, International Centre for Research in Agroforestry [World Agroforestry Centre] and International Institute of Tropical Agriculture (IITA). These organizations have been proactively engaged in the research programmes of the country each specializing in specific research areas such as legumes, horticulture, and soil fertility technologies. They closely collaborate with the national research programmes.

The NGO community formed an important part of the consulted institutions realizing their key role in agriculture. Those organizations visited included Concern Universal, OXFAM, Plan International and World Vision International, Land O'Lakes, Initiative for Development and Equity in African Agriculture /Malawi Agricultural Commodity Exchange, Civil Society Agriculture Network, Total Land Care, Citizen Network for Foreign Affairs, The farmer bodies dealing with agriculture also formed part of this consultative process and in this regard, contacted were: Fertilizer Association of Malawi, Seed Trade Association of Malawi, Agri-Input Supplies Association of Malawi, National Smallholder Farmers Association of Malawi, Mzuzu Smallholder Farmers Coffee Trust,

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and Farmers Union of Malawi. The farmers' organizations and NGOs are actively engaging in technology dissemination in a wide range of areas. They also play a crucial role in the marketing promotion (including private trading operations) and advocacy work on policy.

The private sector institutions met in the study included Seed Co Limited, Malawi Confederation of Chambers of Commerce and Industry and Agricultural Research and Extension Trust (ARET), National Action Group on Private Sector Policy and Microfinance Association of Malawi. The private sector bodies are actively involved in the research works leading to releases of improved crop varieties (with ARET focusing on tobacco research). These are also institutions that play an active role in policy advocacy work in order to create conducive environment for private sector operations.

Lastly but not least on the list of organizations consulted were some two educational institutions instrumental in supporting the agricultural sector. These are Natural Resources College and Bunda College of Agriculture. The two institutions produce manpower for the agricultural sector. The former produces diploma holders whilst the latter offers a whole range of experts from bachelors to postgraduate qualifications (including doctoral level certificates). In addition, Bunda offers tailor designed short courses and conducts research work under postgraduate training level that leads to technology development.

The situation analysis reveals a picture in which there exist a lot of technologies that have been developed already. However, there are still numerous technological gaps with some areas having more needs than others. It is also apparent from the study of existence of a serious mismatch between the number of technologies produced and those reaching the end users. There is a consensus between research institutions on one hand and that undertake technology dissemination on the other that the limited dissemination progress mainly emanates from the poor linkages amongst research and extension professionals on one hand and the technology end users on the other.

Furthermore, the findings unearthed existence of multiple constraints which negatively impact on the technology generation and dissemination works. The obvious constraints that came up included poor state of infrastructure, inadequate human capacities and inadequate funding levels to promote meaningful execution of works. In spite of the existing constraints, there are opportunities of turning around the situation. With a promising economic outlook, the donor community has regained confidence in Malawi hence it is possible to increase funding to the sector. With many stakeholders in place, it is important to exploit the synergies of these numbers to improve work coverage understanding each player's comparative advantage in what they do. The presence of already developed promising technologies/practices is also an opportunity for scaling them up for impact.

With all the constraints and opportunities facing the sector, SADC MAPP should be a vehicle for helping address the constraints and at the same time promote the existing promising technologies. It would be important that as an entry point, that dialogue with

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government should be set in motion to confirm the areas of immediate support. Additionally, the Agricultural Development Programme (ADP) which is under preparation should be a sound entry point realizing that it is meant to be the main framework for all priority investments into agricultural sector. The ADP has a Research and Technology Development Pillar among other key pillars which zero in on prioritising the key issues. It is pleasing to note that the ADP has similar result areas as the SADC MAPP hence making it easy to synchronize the agendas. It is important that SADC MAPP promotes diversity in the types of institutions it reaches out to in order to derive a variety of lessons from the implementation process.

1. INTRODUCTION AND BACKGROUND

1.1 Introduction to the study

There is a general consensus amongst all developmental stakeholders that agriculture is the engine of economic growth within Africa. The continent, especially south of the Sahara, is endowed with a wide range of conducive agro-ecological zones needed to maximize development of the agricultural sector. Subsequently, with proper linkages, the agro-industry is an important system to addressing the undeveloped state of most African nations.

The Food, Agriculture and Natural Resources (FANR) Directorate of the Southern African Development Community (SADC), has embarked on the design of SADC Multi-country Agricultural Productivity Programme (SADC MAPP). The SADC MAPP seeks to improve research and technology development and dissemination in the SADC member states in a bid to enhance agricultural productivity in the agricultural sector. The programme would ultimately contribute to meeting the Millennium Development Goals (MGDs). Furthermore, the programme will act as a vehicle for taking forward activities of Pillar 4 of Comprehensive Africa Agricultural Development Programme (CAADP) of NEPAD. CAADP's Pillar 4 addresses the aspect of Agricultural Research, Technology Dissemination and Adoption.

The lead role for championing implementation Pillar four of CAADP was given to Forum for Agricultural Research in Africa (FARA). FARA therefore developed a Framework for African Agricultural Productivity (FAAP) which would guide formulation of agricultural productivity programs in Africa paying particular attention to sub-regional priorities and strategies. The SADC MAPP is being developed in line with the FAAP as well as existing sub-regional strategies and instruments such as the RIDSP. In fulfilling these requirements, there are a number of important principles that will be observed viz:

- ✚ Increased key stakeholders participation (including smallholder farmers) in the aspect of research priorities;
- ✚ Institutional pluralism in technology generation and dissemination (where NGOs, civil society and universities are active players);
- ✚ Technology generation being market and demand driven;
- ✚ Increasing linkages between research, extension, education and private sector institutions; and
- ✚ Harmonized donor involvement for regional activities

The SADC MAPP preparation process has already reached some advanced stage through the initial stakeholder consultations in the member states conducted between August and October 2006. Other sources of information that fed into the preparation process included a programme concept note, SADC documents and working papers and reports emanating from launched studies.

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As a follow up step to the MAPP design, SADC Secretariat initiated a process of preparing a situation analysis in each SADC member state. The situation analyses will provide inputs into the final programme design work. Furthermore, the analysis seeks to offer suggestions on the possible programme's entry points into the member states.

The situation analysis, therefore, entailed consulting a cross section of purposefully selected agricultural stakeholders from the public, semi-public, private and civil society organizations. These are institutions that deal with issues of technology generation (research), dissemination, agricultural education, and market information generation and dissemination as well as input and output agro-dealers. The various existing technologies, the technology disseminating modes/processes and the prevailing gaps were documented through the exercise. It is envisaged that these findings will provide valuable pointers to areas requiring the programme's support.

1.2 Background

1.2.1 The Economic and Social Context of the Country

Malawi is basically an agricultural country located in South-East Africa surrounded by Tanzania, Mozambique and Zambia. It is a long and narrow country that extends 90° 45' to 17° 51' south of the equator for about 900 Km in length from north to south and varying in width from 80 to 180 Km. The total area is 12.3 million hectares of which 2.9 hectares is under water (DARTS, 2000).

The size of Malawi's population is an issue that has very significant implications for the assessment of national food security. Malawi's total population in 2005 was estimated at 12.3 million of which about 60 percent is under the age of 20. The 2004/2005 Integrated Household Survey (IHS) reveals that 52.4 percent of the population live in poverty. The incidence of poverty is higher in the rural areas (66.9 per cent) than in the urban (54.9 percent) areas. Socio-economic trends in Malawi remain unfavorable when compared to other countries within the Southern African Region.

Malawi's health situation is based on maternal mortality rate, child mortality rate, child and maternal malnutrition, life expectancy, and access to health facilities. While some achievements have been made by implementing a number of policies, some of the health indicators are the worst in the world. For instance, for every 100,000 live births, 1,120 mothers die due to limited access to quality reproductive and health services. Infant mortality rate and child mortality rate are estimated at 76 and 133, respectively per 1000 live births due to limited access to health services and malnutrition. Malnutrition remains both a cause and consequence of poverty. It is one of the most important health and welfare problems faced by many Malawians especially among the urban poor and the rural population. The life-expectancy at birth, which was at 47 in 1987, has now fallen to about 37 mainly due to the HIV and AIDS pandemic. As a result of low life-expectancy and high fertility rates, Malawi has a young and dependent population. This is another scenario that highlights the gravity of poverty situation in the country. In response to this current health situation, the Malawi government, through the MGDS 2006-2011, has

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developed strategies in the area of health and population that will help to achieve improved health for the population and increased number of people with good living standards.

Malawi like many other Sub-Saharan African countries has severely been affected by HIV and AIDS pandemic. The first case was reported in 1985 and to-date despite so many years of national response, the impact remains devastating and the country's efforts are inadequate given the pace of the spread of HIV and AIDS. The national adult prevalence in reproductive age group of 15-49 has slightly declined from 14.4 percent in 2003 to 14.0 percent in 2005 (MGDS, 2006). The devastating impact of HIV and AIDS on agriculture is causing untold misery to most households especially in the rural areas where over 80 percent of the total population lives and also where agriculture is synonymous to livelihood security.

Education is the key for attaining prosperity. It is a catalyst for socio-economic development, industrial growth and an instrument for empowering the poor, the weak and the voiceless. Education enhances group solidarity, national consciousness and tolerance of diversity. On the other hand, there are factors compromising education quality and relevance which include: cultural attitudes on education for girls, inadequate infrastructure including for people with special needs, and lack of school inspection or effective supervision and monitoring. In spite of high enrolment rates at both primary and secondary school levels, literacy rates, in general for all women have remained low, when compared to their male counterparts. The government is implementing a number of reforms in order to improve the current situation especially to increase both access and retention at all levels; improve equity, management and supervision; and the training of more teachers for both primary and secondary school levels.

The performance of Malawi's economy in the past years has not only been unstable, but also dismal between the period of 2001 and 2004. The MGDS 2006 indicates that during this period Gross Domestic Product (GDP) averaged 1.5 percent per annum; Savings and investment ratios have remained low over the period largely on account of low disposable incomes; and National savings as a share of GDP has remained below 3.2 percent while the gross investment has been below 11.2 percent. This disparity shows national savings has not driven investments. The MGDS further indicates that the government is committed to pursue sound economic policies geared at increasing and sustaining economic growth, reducing inflation rate, maintaining flexible exchange rate and improving foreign reserve position. Moreover, enhancing the county's export capabilities will result into increased employment and improved trade balance. It is, therefore, estimated that on average the economy is expected to grow by more than 6.0 percent annually during the period of 2006-2011. This is expected to emanate from growth from agriculture, manufacturing, mining as well as service sectors. Consequently, per capita income is expected to increase from average of US\$160 to an average of US\$450 by the end of 2011 (MDGS, 2006).

As was the case with many developing countries at independence, Malawi had no significant private sector. Subsequently, the government assumed responsibility in

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spearheading development efforts. With no proven mineral resources, and absence of a vibrant manufacturing sector, the agricultural sector assumed the role of the engine for growth. It is not surprising to note, therefore, that the dominant economic activity in Malawi at the time was agriculture. Over the years, the structure of the economy has not changed much and agriculture remains the back bone of the economy.

1.2.2 Importance of the Agricultural Sector

The agriculture sector accounts for about 93 per cent of the total export earnings, provides more than 80 per cent of the total employment and contributes about 35 per cent of the country GDP. Furthermore, the sector contributes 63.7 percent of total income from the rural poor. Agriculture occupies about 56 per cent of the land area covering 5.3 million hectares of the country's 9.4 million hectares and supplies at least 65 percent of the manufacturing sector's raw material requirements (DAES, 2000). The agricultural sector Malawi is dualistic, consisting of small-scale farmers and the estate sub-sector. The sub-sectors have been historically distinguished on the basis of legal and constitutional rules regulating land tenure, type of crops and marketing arrangements.

The smallholder sub-sector is based on customary land tenure system and is primarily subsistence. The estate sub-sector comprises 14,700 estates occupying 850,000 hectares of leased land. Over 70 per cent of the cultivated area in Malawi is under the customary land tenure system and is utilized by 1.2 million smallholder farming families with land holding ranging from 0.5 to 2.5 hectares (DARTS, 1995). Smallholder farmers produce numerous crops such as tobacco, maize, sweet potatoes, groundnuts, pulses, irish potatoes, cassava, sorghum, rice, sunflower, wheat, vegetables, fruits, coffee, macadamia, cashew and spices. They also keep livestock such as cattle, sheep, poultry, goats, rabbits and pigs. Maize, as the staple food, is the most important crop to the Malawian population and occupies about 68 percent of the total land for crops. The estate sector primarily produces cash crops burley and flue cured tobacco, sugar, coffee, tea and tree nuts (macadamia and cashew). The three main cash crops tobacco, sugar and tea account for about 80 percent of the total exports. Tobacco alone contributes as much as 70 percent of Malawi's foreign exchange.

The livestock industry, on the other hand, contributes about 8 per cent of total GDP and about 36 percent value of the total agricultural products. Livestock provides food, income, manure, animal traction and social security. Taking all these into consideration, livestock may contribute more than 11 per cent to the GDP. Livestock provides potential food security among vulnerable groups such as female-headed, elderly and orphan headed households. There are about 1.2 million people who own one or more of the various types of livestock. About 15 percent of all livestock farmers are commercial and the rest are subsistence. Together crops and livestock contribute about 80 per cent of the total production.

1.2.3 Agro-ecological zones and Farming systems

Malawi enjoys a variety of ecological zones broadly grouped into: Lower Shire valley; lakeshore and low lying rain shadow areas; medium attitude areas; and high attitude plateaux and hilly areas. Each of these zones is characterized by unique features in terms of rainfall, temperature, attitude and agricultural operations as described below:

The Lower Shire Valley lies between 30 to 500 metres above sea level embracing two southern most districts of Chikwawa and Nsanje. The area receives less than 600mm annually and is generally not suitable for rain-fed farming for most crops grown in Malawi. The narrow range of crops grown includes sorghum and millet with some exception of one small portion of a hilly area. However, the area is highly fertile and suitable for irrigated farming especially for vegetables and maize. It has an estimated population of about 0.2 million households.

The lakeshore and low attitude rain shadow areas lie between 400 to 1000 metres above sea level. Rainfall ranges from 600 to 800 mm annually. The areas are characterized by very fertile alluvial soils and high average temperatures. The districts in this zone include: Balaka, Karonga, Mangochi, Mwanza, Nkhata-Bay, Nkhota-Kota, Phalombe and Salima. Part of Rumphu (Nkhamanga Plain) also falls within this zone. Nkhata-Bay is an exception in this case as it receives much more rainfall than the rest in spite of its geographical locality in the zone. The population in the zone is about 0.8 million households.

The medium attitude zone covers Blantyre, Chiradzulu, Dowa, Kasungu, Lilongwe, Machinga, Mchinji, Mzimba and Zomba. It also covers parts of Chitipa and Dedza districts. The zone enjoys high average rainfall ranging from 800 – 1,200mm annually with an attitude of 1,000 to 1,500 metres above sea level. A part of this agro-ecological zone (referred to as Kasungu – Lilongwe Plain) is Malawi's bread basket. The farming population is estimated at around 1.5 million households.

The high plateaux and hilly areas lie in an attitude over 1,500 above sea level and receive over 1,200mm of rainfall annually with low average temperatures. The population covered in the zone is approximately 0.8 million households. The zone covers such districts as Mulanje, Neno, Ntcheu, Thyolo and parts of parts of Chitipa (Misuku Hills), Mwanza and Rumphu (Nyika Plateau). Neno, Ntcheu and parts of Mwanza fall within the Kirk Range Highlands. Some types of crops for these areas are different from most of the other ecological zones and include irish potatoes, wheat, coffee and tea.

In all these zones, farmers still grow maize as the main staple food crop although in some of these areas it may not be suitable. Other food crops grown mainly in the lower shire valley include sorghum and millet. Cassava and rice are also dominant food crops grown in the lakeshore district and some of the low lying areas.

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1.2.4 Main Livelihood Systems

Rural livelihoods in Malawi, for all wealth groups depend to a significant degree on production and direct consumption of crops. In addition, many households, including the poor, also derive incomes from growing and selling cash, as well as food crops. Poor rural households in Malawi also obtain 30-40 per cent of their income from 'off own farm' activities (Kydd, Dorward, Morrison & Cadisch, 2004). According to the findings of the 1998 census, the majority of the Malawians in the three regions still derive their livelihood from agriculture. For instance, of the 6.8 million people aged 10 years and above, 4.5 million (66%) are economically active. The majority of the economically active population (78%) are subsistence farmers and the rest (13%) are employees.

According to the Malawi Vulnerability Assessment Committee (MVAC), the country has been zoned according to dominant livelihood systems. The baseline analysis in 2003 identified an aggregate of eighteen (18) livelihood zones across the country based on main sources of food and cash. The 18th zone covers areas which include major urban centres, national parks, nature reserves and other uninhabited areas such as mountains. The following are the livelihood zones designated by the VAC:

Central Karonga	Middle Shire Valley	Northern Lakeshore
Chitipa millet & Maize	Misuku Hills	Phirilongwe Hills
Kasungu Lilongwe Plain	Rift valley Escarpment	Shire Highlands
Lake Chilwa-Phalombe Plain	Nkhata-Bay Cassava	Southern Lakeshore
Lower Shire	Western Rumphu & Mzimba	Northern Karonga
Mzimba Self Sufficient	Thyolo Mulanje Tea Estates	

These zones are distinguished by the types and production levels of food and other crops grown. The southern part of Malawi, with an exception of the Lower Shire Valley, has a relatively lower per capita crop production than the other parts of centre and north. However, the south enjoys a more diverse crop regime than the centre and north which largely relies on maize as the main staple crop mainly in Kasungu Lilongwe Plain and Western Rumphu & Mzimba. Cassava is a unique crop for Nkhata-Bay and Central Karonga zones. Being a crop less prone to water stress and also low input (including labour), it makes the poor relatively food secure than their counterparts in other zones.

With respect to income sources, people in all zones are dependent on crop sales mainly tobacco, cotton and even food crops. Other sources of income are mainly sales of labour and other traded items mainly, inter alia, firewood, charcoal, carvings and mats. Tobacco is the major cash crops for the centre and north whilst cotton is for the Shire valley zones. The other unique zones are Thyolo Mulanje Tea Estates and Southern Lakeshore whose cash generation stems from tea growing and fishing respectively. Those not able to grow tea and fish are able to sale their labour in the tea and fishing industries.

In addition to crop and fish farming, all the zones engage in livestock production which allows the 'middle and better off' households to generate incomes. Some of the zones, Thyolo Mulanje Tea Estates and Lower Shire Valley, benefit from their proximity to

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neighbouring countries (mainly Mozambique) which are sources of cheaper food. The most generic problem faced by all the zones is the unpredictable market situations that lead to unstable incomes.

2. METHODOLOGY OF THE STUDY

The information for the study was collected through both primary and secondary sources. In the former case, a structured checklist was utilized to guide discussions with contacted individuals from the selected stakeholder institutions. The questions attempted to illicit data/information across the thematic areas of the MAPP. Secondary data sources were, wherever possible, collected from the consulted organizations in order to augment information/data collected through direct discussions with the contacted individuals.

The selection of the institutions consulted was undertaken purposefully based on their significance in the agricultural sector. There was, nonetheless, a deliberate effort to include institutions dealing with research and technology generation, technology dissemination (extension), marketing, education and learning and networking activities. Amongst the institutions consulted are those from the public, semi-public, NGO, civil society and private sectors. This was aimed at collecting information that sheds light on a number of critical areas of the sector with respect to each institution's own operational mandate and any linkages/collaboration with other stakeholder institutions. By consulting a wide range of organizations during the exercise, it became easier to triangulate the findings especially considering that most of them have similar roles and mandates in technology generation and dissemination. List of people and organizations consulted is provided as annex 2.

Preliminary findings from the stakeholder consultations and literature review were presented at a national workshop (5th October 2007) to solicit stakeholder comments and contribution. This report provides incorporates comments and contributions from the national workshop (for more details refer to the workshop proceedings – prepared as a separate report).

3. FINDINGS OF THE STUDY:

3.1 Profiles of the institutions in the agricultural system in the country

3.1.1 Description of key institutions

The agricultural sector is served by a multiplicity of institutions in areas relating to the MAPP thematic areas. During the situation analysis work, a number of these institutions were visited to understand their respective roles and mandates in the agricultural sector. In total, thirty-six (36) organizations were consulted in this respect. These were grouped in the following broad groups:

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- ✚ Research organizations;
- ✚ Extension organizations;
- ✚ Non-governmental organizations (NGOs);
- ✚ Educational institutions; and
- ✚ Farmers' organizations;
- ✚ Private sector and agribusiness organizations

Each of the institutions within the aforementioned broad categories has its own roles and responsibilities towards the agricultural sector and in particular the smallholder sub-sector. It is worth noting that a number of institutions' mandates run across the thematic areas of MAPP under consideration. The brief description below outlines the mandates and roles:

a. Technology generation

This role is played by the public, private, semi-public institutions and international bodies.

Public and Semi-public Research Institutions

Ministry of Agriculture and Food Security through the Department of Agricultural Research Services (DARS) has been the champion on technology generation for the smallholder farmers in Malawi. It is mandated to generate research technologies and knowledge to increase agricultural productivity with emphasis on crops and livestock commodities whilst paying attention to sustainable use of the natural resource base. Whilst collaboration is maintained with all other institutions with similar mandates/roles, it is the hub for coordinating the release of all agricultural technologies regardless of the source. Consultations were made with the three main research institutions of Bvumbwe, Chitedze and Lunyangwa. According to the set up of the DARS, each of its major research station is mandated to spearhead research work for specific commodity-based thematic areas. In this respect, Bvumbwe is mandated to work on horticultural crops; Chitedze champions work on cereals, legumes, soils and engineering, technical services and plant protection; whilst Lunyangwa deals with livestock and pastures. The fibers (cotton) are handled by Makoka research station.

With support from the World Bank funded Agricultural Services Project (ASP), the Ministry of Agriculture's DARS had in place a system that allowed appropriate articulation of the research action plans. The plans contained national research priorities and their associated budgetary resources requirements. Based on the national research master plan, these action plans underwent periodic reviews to incorporate changes in the environment and priorities. Additionally, the ASP was very instrumental in instituting a system where research-extension-farmer linkages were fostered. A number of instruments were embedded into this linkage system including monthly joint workshops, on-farm trails that involved all, field days, use of joint committees for reviewing experimental results and forward planning, and enhanced speed of research results dissemination.

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These activities allowed for regular exchange of ideas amongst the three key players. A further interesting part of the ASP was the promotion of contract research whereby some research work was given out to other institutions such as the University of Malawi (Bunda College and Chancellor College) as well as the Tea Research Foundation. Financial resources were released to these contracted institutions whilst DARS played a supervisory role. All these appropriate systems are no longer in place due to lack of adequate resources.

In addition to the DARS, there is the National Research Council of Malawi (NRCM), a public office. This department under the Office of the President and Cabinet (OPC) was formed in 1990 through a Presidential decree to promote and coordinate development and application of research, science and technology for the realization of sustainable socio-economic development. It therefore supports work on research and development and national documentation on research, and soliciting some research funding for works across the sectors, although most of it is for small scale research projects.

The Agricultural Research and Extension Trust (ARET) also deals with technology generation work in the tobacco sector. It has the mandate to promote sustainable production of high quality tobacco with optimum farm profits whilst conserving natural resources and protecting the environment through the development of tobacco technologies and dissemination of technologies and information on tobacco and associated crops to tobacco farmers. Unlike most of the research bodies, ARET combines technology development and dissemination for both the smallholder and estate tobacco farmers. The organization, self-sustaining in its operations, greatly suffers from the unstable financial stand due to exclusive reliance on tobacco levies from the market/auction floors.

Bunda College of Agriculture, a constituent college of the University of Malawi, is also involved in agricultural research work in a number of areas. However, its efforts have largely been put to crop breeding (mainly on beans) with a number of these already released. Due to its diverse nature of its faculties (and departments), the academic institution now enjoys a wide range of research work mainly through its post-graduate programs.

International Research Institutions

Also consulted were the local offices of the international research bodies of the Consultative Group on International Agricultural Research (CGIAR). The CGIAR centers currently operating in Malawi are International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), International Centre for Tropical Agriculture (CIAT), International Centre for Research in Agroforestry (ICRAF) [World Agroforestry Centre] and International Institute of Tropical Agriculture (IITA)/Southern Africa Research on Roots and Tubers Network (SARRNET). Each of these CGIAR institutions plays a key role in promoting technology development by closely collaborating with the national agricultural research system.

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ICRISAT's main area work in Malawi is supporting development of technologies in areas of groundnuts, pigeon peas, chick peas, sorghum and millet. However, initially the mandate was covering only groundnuts. Its work has further extended to supporting community seed systems establishment and groundnuts marketing under which it has supported the establishment a cost effective monitoring system on the aflatoxin levels using simple tool kit.

ICRAF (World Agroforestry Centre) has pursued the mandate of agroforestry technologies development. In its work, it seeks to promote soil fertility improvement, livestock fodder supply, woodlot establishment and domestication of indigenous fruits.

IITA/SARNET's mandate is to support crop improvement, farming system and livelihood improvement. Traditionally, it is famous in Malawi for its work on cassava and sweet potatoes. However, its mandate has widened to cover other crops such as bananas, soybeans, cowpeas and yams. The organization has furthermore been instrumental in technology development of cassava silage (livestock feed) and cassava starch processing hence extending into the marketing arena (value chain).

CIAT has had an initial mandate of conducting bean research. However, its mandate has been broadened to tackle aspects of technology generation for soil fertility improvement as well as undertaking social research geared towards empowerment of farmer groups and local institutions to develop agro-enterprises that would transform rural peoples' livelihoods. Seed marketing has also received support from the organization.

Private Sector Research Institutions:

There a number of seed companies undertaking research and technology generation in Malawi for commercial purposes. These work with the National Agricultural Reaserch Systems in most of their activities although some of their technologies are imported. These companies are mainly working on maize varieties although some have extended to other crops. Seed Company (Malawi) Limited, was consulted as one private company undertaking research in seeds and marketing. Its mandate is to produce and promote technologies mainly released in Zimbabwe (where the company started) and Malawi. Its functions have led to the release of some three popular maize seed varieties. The company closely works with the NARS in order to release its varieties after meeting all the appropriate steps leading to the release a technology.

Within the operations of each of the research bodies examined above, the concept of participatory research is also taking root through the adaptive research trial works. a training element is also embedded. The training activities commonly take the form of demonstrations and field days in order to educate prospective technology users on the new technologies. This notwithstanding, the effectiveness and efficiency of technology dissemination leaves a lot to be desired as evident from limited adoption of the released technologies.

b. Technology dissemination and extension models

There are relatively more institutions undertaking work of technology dissemination and extension services than for research.

Public and Semi-public Institutions:

The Ministry of Agriculture and Food Security is most prominent in technology dissemination and extension service delivery to the smallholder farmers. Four of its other technical departments namely Agricultural Extension Services, Crop Production, Land Resource Conservation, and Animal Health and Industry execute this mandate.

The Department of Crop Production (DCP) is responsible for promoting appropriate crop production technologies in order to improve crop productivity and subsequently food security and raising incomes of farmers. Within this mandate the Department oversees aspects of crop diversification, disease and pest control (pre and post harvest), and farm mechanization. The department is instrumental in improving the availability of the improved seed supplies by promoting seed multiplication programmes.

The Department of Land Resources Conservation (DLRC) is focused on promoting efficient and diversified services dealing with environmental conservation to ensure that land based resources are utilized in a sustainable manner. Thus, key working areas cover land resources planning, information provision and land use monitoring and evaluation. Its main strategic actions include promoting development of conservation structures, conservation farming and agro-forestry.

The Department of Animal Health and Industry (DAHI) spearheads work aimed at promoting sustainable livestock development in Malawi. It addresses aspects of animal production, pests and disease control, and inspectorate services. The Department has for a long time been running livestock centres across the country where breeding work has taken place. However, operations of the centres have suffered from limited funds availability in the absence of donor funding support. The Department has initiated innovative means of spreading its operations to the end users by promoting farmer-led technical services. Such a system has resulted to stud breeding, drug administration, artificial insemination, pregnancy diagnosis and heat detection services being transferred to community- managed.

The Department of Agricultural Extension Services (DAES) is the main conduit for the dissemination of all technologies going to the smallholder farmers, regardless of its source of origin. It seeks in its mandate to ensure that agricultural extension services are provided in partnership with other service providers. The current extension policy places emphasis on aspects of demand-driven and pluralistic nature of service provision. In order to be effective, the Department has a number of specialized units which deal with: extension methodologies and systems, communication, gender and HIV/AIDS mainstreaming in agriculture, food and nutrition and agribusiness development. The

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innovative approaches to service delivery have been well embraced by the Department as evident from such approaches as farmer to farmer extension, model village for total transformation, decentralization of extension service delivery to the district level (with comprehensive extension structures being put in place), mainstreaming gender and HIV/AIDS into the work place. One of the critical issues addressed by the decentralization move is fostering coordination of service providers at the district level whilst at the same time ensuring that farmers have a say in the services needed and their sources. The department closely works with other departments which generate the technologies and provide technical and advisory services.

The Department of Irrigation Services, within the Ministry of Irrigation and Water Development but previously part of Ministry of Agriculture, plays a key role in disseminating irrigation technologies to the smallholder farmers. Its mandate is to develop land and water resources for irrigation. The department is promoting a number of irrigation technologies such as gravity-fed river diversion, treadle pumps and watering cans (as manual water lifting devices), motorized pumps, and canalization. Recently, it has played a key role in developing farmer associations/cooperatives as a step towards promoting sustainable irrigation management by the communities.

The Agricultural Research and Extension Trust (ARET) plays a crucial role in dissemination of technologies on tobacco. It is now the sole body championing this work for both large and small scale farmers. It would be stated that through dealing with both technology generation and dissemination, ARET is in better position to ensure that what gets developed is seen through the farmers. Nonetheless, by covering both estates and smallholders, the organization is seriously challenged on its capacity.

Bunda College of Agriculture plays its own role in dissemination of technologies. It has been established through the consultations that the outreach programme around the vicinity of the college plays a significant role in disseminating technologies to these end users. The technology centre established at the college plays similar technology diffusion roles.

A number of other semi-public institutions also actively take part in dissemination of the technologies. Most of these are commodity-specific focused. For instance, the Dwangwa Cane Growers Trust promotes smallholder sugarcane production hence it has a key role in dissemination of technologies on sugarcane production. Similarly, the Smallholder Tea and coffee Authorities champion such works amongst the smallholder farmers growing tea and coffee respectively.

Non-governmental Organizations and Farmer Organizations

The non-governmental organizations (NGOs) and farmer groups (associations) are also taking an active role in the technology dissemination work. A number of these bodies were visited and highlighted their roles as shown below:

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National Smallholder farmers Association of Malawi (NASFAM): This body, initially established as a donor supported project, has its broad mandate of contributing to improvement of livelihoods of the smallholder farmers. In its operations, it covers a wide range of areas such as agricultural productivity and marketing. It enjoys a sound network of structures into the rural areas. It disseminates technologies on all crops grown by its association members in order to boost their productivity. Amongst the models of extension pursued are: farmer-to-farmer extension, farmer association promotion as an empowerment process, area specific problem solving demonstrations to promote best practices.

The overall impression created so far is that NASFAM is the most successful model for organizing farmers in Malawi. It has embraced business spirit within the institutional structure of the organization and association members are getting accustomed to this line of farming operations hence providing some hope for the future.

World Vision International is another key NGO participating in technology dissemination amongst smallholder farmers. Its operational mandate is to improve the well-being of communities through addressing livelihood systems of people. It has a wide area of work ranging from agriculture and food security, water and sanitation, health, HIV/AIDS and disaster relief programmes. Model means for reaching to farmers with technologies has been in form of: in-kind / pass-on credit system to promote enterprise diversification in both crops and livestock. The system creates community wealth that is revolved within itself (concept of revolving fund system). The NGO furthermore embarks on community-based seed multiplication. The concept of community grain reserves further empowers communities to be food self reliant. The integration of fish farming in its areas of work injects into communities aquaculture technologies that have been valuable in food security and income generation. World Vision also promotes irrigation technologies as a means to augmenting farmers' food and income sources through multiple cropping.

Concern Universal has made significant progress in technology promotion within its areas of operation. Its mandate is to give more and quality support to people who live in poverty by deepening and expanding their operation mainly in its five programme areas. The five areas of work include: food security and sustainable livelihoods, microfinance, water and environmental sanitation, local organizations capacity building and emergency and rehabilitation. The organization has a number of technology dissemination models viz: village extension multipliers concept that fills in the staffing gaps; use of model village concept in promoting technology diffusion; pass-on credit system for the crop seed and livestock inputs; community-to-community learning to improve water and environmental sanitation; and farmer-led research in fish cross-breeding and feeding.

Plan International is also an active NGO operating on technology dissemination and extension service provision. Its mandate is to achieve lasting improvements in the quality of life of deprived children. The organization's work revolves around children's lives although inevitably it has to work with communities within which these children are raised. It also has some model approaches which it follows in order to promote

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technologies in the communities and these include: pass-on system in input credit (both livestock and seeds); entry into schools with vegetable production and livestock technologies in appreciation of the need to build know how into the future leaders of the societies. As a long-term survival strategy for communities, irrigation has been embraced in its work mainly promoting the treadle and motorized pumps.

Land O'Lakes focuses on the promoting dairy farming technologies. Thus, its mandate is to support the increase in the number of rural poor households that derive their main livelihoods from dairy business. In pursuance of this mandate, emphasis is placed on high productivity enterprises whilst at the same time paying attention to quality and affordability of dairy products. The organization promotes dairy animals ownership amongst the poor via the heifer pass-on credit scheme. In recognition of the complex nature of dairy enterprise, it also has a more comprehensive heifer loan scheme covering the animal, death insurance, veterinary drugs, feeding and artificial insemination. Milk is a highly sensitive product, hence in order to maximize benefits from it, the value chain system is observed in which producers are linked all the way to markets for both inputs and outputs. In support of extension and marketing operations, the organization has played a key role in supporting the capacity of dairy farmers' groups referred to as milk bulking groups (MBGs).

Mzuzu Coffee Planters Cooperative Union (MZCPCU) has a unique mandate of promoting coffee production and marketing. Its mandate therefore is to promote sustainable production, processing and marketing of high quality coffee (Arabica Coffee). It nonetheless also supports its farmers to promote technologies on other crops in view of the long gestation period of coffee as a tree crop. In its operations, contact farmers have been used as trainers of other farmers. Under this extension model, a strict fortnightly training programme is followed by the trainers.

Total Land Care (TLC), an NGO transformed from a project under the Department of Land Resources Conservation, takes an active role in technology dissemination to smallholder farmers. Thus, its mandate is to increase the production and income levels of smallholder farmers through improved agricultural practices with sustained conservation and management of the natural resources. The operations focus on issues of soil and water conservation, reforestation and agro-forestry, crop diversification into high value crops, conservation farming, and water supply and sanitation. In an effort to promote its operations, the NGO has been able to produce manuals on treadle pump and land care practices. The manuals have played a useful role in informing the communities on best practices pertaining to appropriate usage of the treadle pump, including routine maintenance, crop specific husbandry practices and fertilization; and information provision on the land issues faced by the country against the associated best practices (conservation and agro-forestry).

OXFAM was also another NGO consulted in the exercise. The organization also works towards the improvement of the livelihoods of the smallholder farmers by promoting various technologies. Its operations cover areas of crop diversification, irrigation development, soil and water conservation and relief work. Several techniques are

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employed to disseminate technologies to farmers. The pass-on system of seed multiplication is practiced just like other NGOs and the same system is in use for small livestock mainly goats, guinea fowls and chickens. Within the livestock enterprise promotion is a practice of using volunteer village based livestock technicians to disseminate technical information and administer simple veterinary drugs. The lead farmer concept is an equally important practice in message dissemination.

c. Farmer Empowerment and Market Access

The situation analysis work revealed that there are many organizations which take part in aspects of empowering farmers on individual and group bases. The main farmer empowerment processes include training, group formation, credit provision, exchange visits, establishing linkages with markets and other direct support such as investments in community infrastructure. The depth and breadth of work across the various organizations vary significantly with some doing it as a minor function whilst others take it as a core function. It should be emphasized that training is the most popular means through which farmers are empowered technically.

Public and Semi-public Institutions

The Ministry of Agriculture and Food Security's technical departments have significant roles in empowering farmers. Firstly, the Department of Agricultural Extension Services (DAES) has been the most instrumental in this case. With its mandate, it is the main vehicle through which training programmes are delivered to farmers across all technical subjects. The Residential and Day Training Centres (RTCs and DTC respectively) have been key in offering training to farmers. It is, however, regrettable that most of these institutions are now dysfunctional due to the funding limitations. Special emphasis has now been given to the formation and development of farmer associations and cooperatives. The Agribusiness Unit of DAES is taking an active role in promoting the development of these association and cooperatives to promote a culture of taking farming as a business amongst smallholder farmers.

Each of the other technical departments also plays a key role in collaborating with the DAES to foster dissemination of technologies via the training operations. Their involvement is two fold: to support in the development of appropriate technical messages on subjects pertaining to their jurisdiction and the dissemination of the same to the farmers. In order to ably support the message delivery system, each department places specialists into the extension structure up to the district level (for most departments) except for a few that have presence even at lower levels (below the district level) such as the Department of Animal Health and Industry. With the emergence of farmer association/cooperative movement recently, collaborative efforts between DAES and other technical departments such as Crop Production and Animal Health and Industry are commonly found in such endeavors. Similarly, such collaboration occurs with other Ministries such as Irrigation and Water Development and Trade and Industry. In the former case it is aimed at supporting association/cooperative movements in irrigation sites whilst it relates to the registration process whose mandate rests with it.

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The Agricultural Research and Extension Trust (ARET) also actively participates in the empowering farmers through training. It employs a number of approaches in its training programmes including demonstrations, field days and general training that encompasses both technical and group leadership aimed at empowering the farmers.

Through the outreach programme, Bunda College also plays a role in empowering farmers to appropriately adopt the various developed technologies. Training on the technologies developed empowers the farmers to appropriately adopt the technologies under promotion.

A number of other semi-public institutions actively take part in market promotion work. These are commodity-specific focused. For instance, the Dwangwa Smallholder Cane Growers Trust (DSCGT) and Smallholder Tea Authority (STA) promote smallholder sugar and tea marketing respectively for the benefit of their farmers. In this regard, market information is also handled as integral to this function.

Farmer group mobilization is popularly used as a farmer empowerment process. There is a general consensus amongst development practitioners that cohesive groups offer strength and synergism amongst group members. Moreover, the groups make training simpler as members are reached together with the training materials.

Non-governmental Organizations and Farmers Organizations

The NGO sector plays an increasingly crucial role in of farmer empowerment activities. Each of the consulted NGO indicated their active roles in training farmers on the various technologies they promote realizing that training is essential in enhancing technology adoption. In addition to employing the conventional training, the visited NGOs use a number of other tools viz: on-farm demonstrations, field days and agricultural shows. Adult literacy has been included in the training activities to ensure that the farmers gain a higher level of understanding of disseminated technologies. Some of the NGOs, such as Concern Universal, have also played a role of revamping the community structures/ decentralization structures such as area development committees (ADCs), village development committees (VDCs) and specialized village committees (agriculture/water). It is envisaged that stronger structures would be instrumental in supporting development initiatives in communities.

The NGOs have also supported empowering farmers financially to improve the availability of working capital. This support has given birth to the concept of community-based credit schemes/microfinance operations. Village savings and investments have emerged under such operations. Concern Universal, Plan International and Oxfam are amongst some of the NGOs presently supporting this initiative. Another popular form of this is the credit in-kind/pass-on revolving system that has injected seed capital into communities in form of crop seeds and livestock. There has been limited information on the assessment of the impacts and sustainability of these forms of these credit schemes.

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Associations/cooperatives development has also received attention from the NGOs and a general consensus exists of the importance of these bodies in supporting agricultural productivity enhancement. National Smallholder Farmers Association of Malawi (NASFAM) has played a significant role in the development of farmer association across the country. Its operations have led to the development of marketing operations of these farmers. The organization has put in place an organized crop marketing system including export markets (mainly chilies and groundnuts), and instituted a sound quality (e.g. aflatoxin) monitoring system in conjunction with ICRISAT and weather risk insurance policy system for groundnuts. To attain high levels of cohesive bodies, rigorous training has been conducted for these bodies. In due cognizance of the importance of strong leadership in any body, Land O'Lakes has helped in the development of strong leadership of milk bulking groups (MBGs) and the milk producers associations such as Central Region Milk Producers Association (CREMPA). Similarly, Mzuzu Smallholder Farmers Coffee Trust has engaged in rigorous development of coffee cooperatives to empower coffee farmers embrace commercial orientation in their farming.

d. Agricultural education

Two education institutions, Natural Resources College (NRC) and Bunda College of Agriculture were consulted. The two institutions play a vital role in supplying manpower to the agricultural sector. The former institution, a semi-public body, produces diploma certificate holders whilst the latter produces higher level qualifications from basic degree to postgraduate ones. The weakness of NRC lies in lack of accreditation of its diploma certificate mostly due to the weak theoretical materials offered to students. The institution also lacks appropriate infrastructure (laboratories and other farm equipments) needed to support practical work. The courses offered at the institution include agriculture and natural resources management, environment for sustainable development, animal health and production nutrition, food and livelihood security, irrigation technology and land administration. Since the courses are demand-driven, the picture emerging is that the courses on agriculture and natural resources management and nutrition, food and livelihood security are most popular.

Bunda College is the main source for most technical specialists working in the agricultural sector. Its diverse faculties allow it to produce a wide range of specialists. Its courses include: seed technology, social forestry, horticulture, agronomy, crop protection, soil, animal science, nutrition and food science, agricultural and applied economics, rural development and extension, agribusiness management, aquaculture and fisheries, social forestry, agroforestry and agricultural and resource economics. It is encouraging to note that most of the courses offered by the institution are demand-driven by end users (employers) both from public to NGO bodies. In addition to these courses, the college actively undertakes research work on crops, livestock and policies. Through its postgraduate programme, the institution makes significant contributions towards research works on crops, irrigation, livestock and policies. The crop research has resulted into the production of a number of varieties of crops, mainly beans where a number of varieties have been released. Work on dairy goat breeding has helped popularize the use of goat milk amongst households with malnourished under-five children. This work has been

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accomplished through an outreach programme which the institution has established mainly around its neighbourhood.

The engineering arm of the College has also made some significant involvement on engineering technologies. Some of the areas covered have included rain water harvesting, water detention structures for irrigation and water supply, integrated rural water supply, agro-processing, labour saving technologies, alternative energy systems (such wind, solar, water, biomass, biogas, bio-fuels) and post-harvest and storage technologies.

Most of the technologies have not been adopted by the farmers due to the limited dissemination efforts. Those technologies that have reached out to the farmers have not been evaluated/assessed for their impact and acceptability amongst the end users. In a bid to promote dissemination, a technology centre has been established on the college premises where the technologies are demonstrated. This is in addition to the outreach efforts in the villages around the college.

ARET, through its Mwimba Farm Institute has become an important institution for offering formal training to tobacco farmers as well as technical professionals. Both theory and practical materials are intensively handled during the training hence releasing well qualified people who are useful in the tobacco industry.

In addition to aforementioned institutions, there are a wide range of largely public and semi-public institutions in the country that offer various forms of agricultural training. For instance, within the Ministry of Agriculture and Food Security there are a wide range of institutions offering these trainings on areas of livestock (Mikolongwe Veterinary College) and fisheries (Malawi Fisheries College). The role of the private sector is so far a limited role in this area.

The study revealed that there are currently limited formal linkages between the Ministry of Agriculture and Food Security on the one hand and the educational institutions. The Ministry was closely linked to NRC when it was a full public institution than is the case after its attainment of the semi-autonomous status. The same is true for Bunda College which is working with the Ministry on ad-hoc basis as it belongs to University of Malawi and Ministry of Education. This is an area that needs improving upon to contribute to production of quality human resources for the sector.

e. Agricultural inputs and output market promotion

Accessibility to agricultural inputs is crucial to the development of the agricultural sector. A number of the consulted stakeholders have different roles and responsibilities in improving the input supply to the smallholder farmers.

Public and Semi-public Institutions

From the government side, seed multiplication endeavours by the Department of Crop Production have assisted to improve the supply of quality seeds at village settings.

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The supply of agroforestry seeds is presently being supplied by the Land Resource Centre which is a government formed trust; in conjunction with the Forestry Research Institute of Malawi (FRIM).

The role of government on the policy front is key in promotion of markets and availability of agricultural inputs. The liberalized marketing environment has permitted entry of more players into the markets. Furthermore, the government remains key in carrying out regulatory functions to ensure adherence to quality standards. The regulatory functions are apparent within the Ministries of Agriculture and Food Security, Trade and Industry as well as Malawi Bureau of Standards.

Bunda College of Agriculture through its research programme contributes to the supply of basic seeds to the farming community. Similar endeavours are evident in the livestock sector where its outcomes find their way to the communities for promotion of such livestock types, for example, dairy goats.

ARET is also the sole supplier of tobacco seeds to farmers in both the estate and smallholder farmer sub-sectors. The organization undertakes multiplication of quality seeds which undergo the certification process for germination and purity by the DARS. This seed is supplied to farmers through its field offices across the country.

International Research Institutions

The CGIARs operating in the country have provided significant input into the crop seed input markets since they have injected the needed basic seeds and planting materials to the farmers undertaking seed multiplication. Additionally, they have supported the NARS with the needed germplasms for their research work. In recent times they have been proactively involved in market promotion by partnering with both public, NGO and farmer bodies. Of a particular example in this case is support to NASFAM through introduction of a cost effective quality monitoring tool that assesses aflatoxin levels in groundnuts prior to exporting.

Private Sector

The private sector has for long been a key stakeholder in the agricultural inputs industry. The private input supply companies promote a wide variety of the hybrid crop seeds such as maize and vegetables. Additionally, they champion marketing of crop protection products and livestock drugs which are crucial in the farming systems. It is common practice for these supply companies to work through agents that stock their products. It, nonetheless, need to be stressed that the remotest areas of the country do not enjoy easy access to such input supplies from these companies.

Non-governmental Organizations and Farmer Organizations

Similarly, the NGO community has also significantly complemented government's efforts in crop seeds supply system. Most of the NGOs have embarked on seed

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multiplication activities, most of them operating on a in-kind credit system. NASFAM, being a commercially oriented organization is actively involved in organizing supplies of quality seeds to its association members.

An important element in agricultural inputs supply is played by a number of various associations formed by stakeholders. In this regard, consulted bodies were Citizen of Network for Foreign Affairs (CNFA)/Rural Markets Development Trust (RUMARK), Agri-Input Supply Association of Malawi (AISAM), Seed Trade Association of Malawi, Fertilizer Association of Malawi, Initiative for Development and Equity in African Agriculture (IDEAA)/Malawi Agriculture Commodity Exchange (MACE), Malawi Microfinance Network, Association of Smallholder Seed Multiplication Action Group (ASSMAG). The stakeholders have different through which they undertake their respective roles of contributing to input supply.

CNFA/RUMARK has a particularly unique approach to supporting this role through the promotion of agro-dealer operations. The organization's roles include provision of training to the commercial trainers (CTs). The CTs in turn identify and train, at a cost, interested rural agro-dealers on aspects of business management and technical product usage and handling. The trained agro-dealers are linked to the private companies which provide inputs on credit backed by credit guarantees from CNFA/RUMARK; as well as cash loans disbursed through Malawi Rural Finance Company (MRFC). The sort of inputs handled through the agro-dealers includes fertilizers, seeds and crop protection chemicals. Integral to the operations of CNFA/RUMARK is the undertaking of farm inputs demand creation activities which include on-farm demonstrations mounted by agro-dealers and farmer field days. CNFA operations do foster NGO-private sector linkages in which some cost sharing is practiced including the inputs used on the demonstrations and prizes received by most successful agro-dealers.

Each of the associations also strives to deepen its marketing operations for the benefit of its members. Thus, the supply of seeds, fertilizers and crop protection products are largely promoted by the associations. Operations of seeds and fertilizer supplies are championed by the Seed Trade Association and Fertilizer Association of Malawi respectively. The Malawi Microfinance Network is instrumental in promoting the operations of the microfinance institutions so that they provide working capital to the farming communities.

Another most important role of the associations has been lobbying government on the policy front to allow their members participate in the subsidy programme. This is an important move if the private sector is to remain vibrant in supporting the agricultural sector.

IDEAA/MACE, National Action Group on Private Sector Policy Development and Malawi Confederation of Chambers of Commerce and Industry (MCCCI) have a critical role in marketing promotion. They deal with market issues from the policy are information generation perspectives. IDEAA/MACE has instituted a weekly marketing information collection and dissemination via the SMSs, bulletins and internet. The

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activity promotes linkage of buyers to sellers thereby enhancing trade. However, the weakness of this data collection and dissemination lies in its focus on outputs only and not inputs. Through the organization of trade fairs and agricultural shows, MCCCCI has a pivotal role in making farmers' products visible to prospective buyers. Information exchange between buyers and sellers is, therefore, promoted through such events.

National Smallholder Farmers Association of Malawi (NASFAM) and Mzuzu Coffee Planters Cooperative Union (MZCPCU) have reputations of supporting marketing operations of their associations/cooperatives commodities. NASFAM enjoys European export markets for chilies and groundnuts; whilst MZCPCU exports coffee into the western market. The success stories in the two organizations' marketing operations are a manifestation of business orientation adopted in their management style.

The role of farmers' bodies in marketing need not be overlooked. In particular, the ASSMAG and FUM actively get involved in the marketing operations of their members' products. These organizations offer linkages of their outputs to the various buyers. For instance, ASSMAG works on the identification of seed markets for its members. Both market information and policies are of importance in their dealings. To influence policy, emphasis is put on advocacy work with government. The weakness in these organizations work has been their dependence on government support in disposing of their seed products. They are yet to reach a level of advancement being enjoyed by NASFAM mainly reflecting differentials in managements' quality. The dependence syndrome seriously threatens the sustainability of their operations.

With all the various forms of involvement of various stakeholders on marketing front, the picture remains less promising. The accessibility to markets by producers and input suppliers remain weak thus limiting the gains derived by the stakeholders. Markets are expected to stimulate production/productivity hence the need to improve their operational efficiencies.

3.1.2 Institutional Linkages and Coordination

Operations of research/technology generation and dissemination, market system and capacity building are linked and coordinated via a wide range approaches. Thus, there is no single approach to this and neither is there a macho body dealing with all such issues. It is, therefore, important to highlight a number of the ways through which the institutional linkages and coordination are being done.

a. Research/Technology generation

The Ministry of Agriculture and Food Security, as noted earlier, has the mandate of releasing all technologies. In order to accomplish this, an Agricultural Technology Clearing Committee (ATCC) is instituted and charged with reviewing all research results and determining whether to release it or not. The DARS, through the Technology Transfer Section, serves as the secretariat of the ATCC. The ATCC draws its membership from the different institutions with a mandate of research/technology

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generation. It also includes a representative of the Department of Agricultural Extension Services.

The ATCC is not the only way through which scientists interact. Their interaction is also fostered through scientific conferences, field days, and seminars. Additionally, linkages occur through production of research publications including such as the DARS journals, technology release circulars, and newsletters such as AgriTech News. Other stakeholders also have their own publications which periodically come out. Apart from the formalized collaboration, a number of linkages/coordination happen on a less formal basis and this is dependent upon the initiative of concerned parties. It was found during the consultations that there are a multiplicity of collaboration between the university, the CGIARs, NGOs and public bodies.

Thus, the ATCC operations could be deemed a model coordination mechanism that brings together scientists and technology dissemination personnel. The major weakness of this system lies in its focus at the release stage and not seeing through the dissemination of the technologies to the end users. The number of technologies released is by far exceeding those actually reaching the end users and this is a fact elaborated by a cross section of consulted stakeholders from research and extension bodies.

Overly, research and technology development work in the country is conducted by a range of stakeholders as observed in earlier sections of the report. The study reveals that of the many categories of researchers, the public and semi-public (university) institutions are least privileged due to serious funding and infrastructural constraints. Thus, collaboration and linkage efforts are always compromised due to this limitation. The CGIARs housed within the Ministry of Agriculture and Food Security and mandated to work in close conjunction with DARS find themselves operating on their own up to the farmer level due to failure of the latter to effectively team up with them. This scenario breeds some serious cooperating conflicts as the two parties fail to fully work together as required. Collaborative research work is most desirable as it maximizes synergisms. Importantly also is the fact that DARS champions technology releases hence it will always be difficult to support the results of the research work in the absence of maximum collaboration between them on the one hand and the others (semi-public, private and CGIARs).

Collaboration in research is also gaining more strength in cognizance of the need to have research agenda being demand-driven from the domestic and/or market view points. It is also in this realization that CIAT is employing participatory and decentralized research methods involving farmers from problem identification to technology development.

b. Technology Dissemination

The Ministry of Agriculture, Fisheries and Food Security has a comprehensive structure for coordinating technology dissemination. The Agricultural Development Division (ADD) structure runs from the central (national headquarters) to the lowest level which is an agricultural section at farmers' level. This system forms an organized coordination

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mechanism which brings all technical specialists under a single management system thus making it easier to coordinate the operations of various departments.

Until recently, there was no formal coordination mechanism for technology dissemination as has been for technology development. This is in spite of the key role the Department of Agricultural Extension Services (DAES) plays in extension service delivery system. However, this trend has changed since the development of the new agricultural extension policy in 2000 by the Ministry of Agriculture and Food Security through the DAES. This policy recognizes that DAES is just one player in technology dissemination as a whole range of other stakeholders are actively into it. Thus the new policy emphasizes on dissemination that is involving all players concerned and responding to the felt needs of the farmers. Hence the policy is defined as being 'pluralistic and demand-driven'. The existence of many extension agencies, including farmers' organizations, brought up a realization of coordination needs so that used dissemination approaches are not at the expense of quality. In this extension policy, the district is seen to be the focal area where coordination mechanism should be strictly observed. This is understandable as this is centre stage where technology dissemination occurs.

The need to improve coordination at the district led to development of an 'Implementation Guide' by the DAES. The guide defines the operation of the district agricultural extension services system (DAESS). The DAESS seeks to put in place structures in form of committees from the district headquarters to the lowest structures of the district. At the district headquarters, there would be the district agricultural committee (DAC), district agricultural extension coordination committee (DAECC) and district stakeholder panel. At the lower level, an area stakeholder panel would be instituted to be close to the farmers. These structures are deemed appropriate to catalyze technology service demands from the farmers and have them channeled to the districts where depending on the most appropriate service provider; the services would be delivered to the farmers. Participatory tools would be put to intensive and extensive use to promote involvement of farmers in the system.

The DAESS provides an elaborate coordination structure for enhancing technology dissemination. Nonetheless, the implementation experiences are yet limited of its operational efficiency. Inevitably, the operationalization of the system requires some substantial investment resources. The financing of such a system would also call for increased collaboration amongst the key stakeholders at the district. With the Ministry's operational funding situation taking a downward spiral, this challenges the practicality of the coordination mechanism.

Non-governmental Organizations and Farmer Organizations

Overall, institutional coordination and linkages have also been fostered through the emergence of associations, networks and other apex bodies. The primary mandate of these bodies is to promote a common voice on matters of policy and technical aspects. For instance, the Farmers Union of Malawi (FUM) looks at the interests of all its

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association affiliates on policy dialogue with government, capacity building and institutional development and coordinating marketing of association commodities. Similarly, the Malawi Microfinance Network deals with the interests of microfinance institutions as members on policy issues.

All NGOs are registered with the Council for Non-governmental Organizations in Malawi (CONGOMA). The organization is charged with mandate of ensuring that the NGOs adhere to common operational procedures. Thus, it is a regulatory body on the NGOs' conduct on work related issues. However, its effectiveness in following up on the NGOs professional performance is not known.

Another key coordinating body is the Civil Society Agriculture Network (CISANET). Its role is to bring civil society bodies in agriculture to deal with policy and operational issues facing agriculture and their work. CISANET has actively participated in national budget tracking focusing on both the budgetary provisions to the Ministry of Agriculture and utilization of these resources. It has, in this respect, been instrumental in working with key arms of the government (such as Parliamentary Committee on Agriculture and natural Resources) to lobby on issues requiring their attention. It has also commissioned research works aimed at supporting its advocacy work with government and other stakeholders. One of the tools employed in its work is establishment of a national stakeholders' panel that critically examine any issues of concern. There is, nonetheless, realization of the fact that similar panels exist at district level to allow a participatory approach to dealing with issues affecting the sector; this approach faces the challenge of low district capacity.

3.2 Description of 'best-bet' agricultural practices and technologies

The consultations undertaken revealed existence of several best practices in a number of institutions working in the agricultural sector. However, it has to be acknowledged that most of the institutions have not undertaken formal evaluations/assessments of technologies to arrive at the decision that these are 'best bet' technologies. Most of the decisions of this assessment are based on the popularity gained by a technology amongst the intended end-users. It was, nonetheless, easy to triangulate some of the information on these informal assessments on best practices as they came up in more institutions consulted. The assessment of the crops was more difficult for some crops due to there being too many varieties that have been developed by research bodies. The situation was easier for other productivity enhancing technologies.

a. Promising technologies/practices and operating environment:

Malawi has developed and/or adapted vast numbers of technologies. These have originated from the national research institutions including the public and semi public bodies (including universities) and private sector and the international research institutions such as IITA, ICRISAT, CIAT and ICRAF. To date, the number of released technologies is so large that no single record exists documenting them all.

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Furthermore, there is a general absence of evaluations on the performance of these technologies. From the government side, it was almost impossible to get a recollection of the evaluation(s) that could have been conducted in the past.

It became apparent from the discussions with the stakeholders that various categories of public, semi-public and private sector have had their own developed technologies. However, not all these technologies have gone to the intended end users.

Table 1 below presents some promising technologies that could be up-scaled within and outside Malawi by addressing the obstacles impinging on their adoption. Looking at the areas of implementation, there has been some area specificity of technologies coverage. For instance, crop varieties ideal for the low and medium altitude areas have gone to such ideal places. However, some best practices have been adopted across the country regardless of the agro-ecological zones, for instance, the pass-on credit system worked across different agro-ecological zones. It also became clear from the consultations that some characteristics of the communities are more conducive to technology uptake/adoption. The concept of group, association and cooperative mobilization has worked well in reaching out farmers with technologies. Within such structures, the quality of leadership is an important determinant of technologies and practices adoption.

All works taking place in Malawi is guided by a liberalized market oriented environment where the private, NGO, international and farmer association organizations freely operate in the market. There is a growing realization that technology development should be demand driven in order to further improve chances of acceptability amongst targeted end users. Therefore, this has led to the adoption of participatory research methodologies right from problem identification to development of the solution (technology). Similar approaches are conspicuously being embraced by most technology dissemination organizations.

It was also apparent from the situation analysis work that technology development especially in the public and semi-public sector has now greatly stalled due to limited funding levels and heavily dilapidated research infrastructure in recent times. Thus, it is an outright fact that technology development could only be enhanced with commitment to funding research work realizing that research is not always cheap.

The developed crop varieties could be scaled up and out to the other SADC countries through their adaptation in these countries mainly starting with the neighbouring ones. Based on the results, some of the most suitable varieties could be fully promoted. As for the extension models and practices, it is possible to create the impressions through staff and farmer tours to Malawi from the neighboring countries when these practices are on the ground. There are already a number of regional tours that have previously been undertaken amongst these neighbouring countries hence the proposal is to follow similar approach.

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Table 1: ‘Best bet’ technologies and Practices/Methodologies

Category	‘Best-bet’ Technologies/Practices	Description on potential for out-scaling	Technology/Practice Origin
Technology generation	Crop varieties:		
	Open pollinated variety (OPV)		
	Maize:		
	ZM 621 (Masuku)	It is suitable for wide environments in the low and medium plateau areas; hence could cover most maize growing areas. Seed supply system development is an area of support.	Nationally developed
	Masika	Seed supply system needs developing	Nationally developed
	ZM 521	It is suitable for wide environments in the low and medium plateau areas. Seed supply system needs developing	Nationally developed
	ZM 421	It is suitable for wide environments in the low and medium plateau areas. Seed supply system needs developing	Nationally developed
	Rice:		
	Kilombero	Most sought after for its high scent hence on high demand on the local market. Seed supply system needs support to increase wide adoption. Value addition at farm level is also an intervention area.	Nationally released
	Faya	This ranks second to Kilombero in terms of market demand. Support to seed supply system is an intervention area. Value addition at farm level is also an intervention area.	Nationally released

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	Sorghum:		
	Kachangu (ICEAP 00040)	It is early maturing hence escapes attacks of Fusarium wilt (deadly common disease in Malawi). Seed supply system needs support	Developed in India
	ICP 9145	It has been around for many years. The seed system needs support	Nationally developed
	Groundnuts:		
	CG 7	Commonly grown amongst farmers. Uptake in Malawi is in the 80% plus range. It could be taken to neighbouring countries (mainly)	Nationally developed
	Chalimbana 2005 (C851/7)	Very high market potential. Seed supply system needs support	Nationally developed
	JL 24	Very high market potential and generally attractive for domestic consumption. Seed supply system needs support	Nationally developed
	Nsinjira	Very high market potential and generally attractive for domestic consumption. Seed supply system needs support	Nationally developed
	Beans:		
	Maluwa	High market demand. The seed supply system needs support	Nationally developed
	Napirira	High market demand. The seed supply system needs support	Nationally developed
	Sugar 131	It commands good market demand due to fast cooking and good taste. It is adapted in low soil conditions hence wider coverage could be expected. The seed system needs support	South America developed
	Sapatsika	High market demand. The seed supply system	Nationally developed

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		needs support	
	Soybeans:		
	Ocepara-4	Most common amongst farmers. Seed supply system support is needed. There is need to support development of varieties with longer shelf life and rehabilitation of storage facilities (cold rooms) at research stations	Nationally developed
	427-5-7	It is ideal for making soybean products such as soymilk and soy flour for children's feed. Seed support system needed; and an improvement in shelf life is an area requiring support as well	Nationally developed
	Cassava:		
	Manyokola	Sweet cassava with a high market demand. The seed supply system needs expanding to reach out more farmers	Nationally developed
	Sweet potatoes:		
	Kenya	Early maturing variety. There is demand for appropriate storage systems to increase its shelf life	Originates from Kenya
	Tainoni (Tainoni 57)		
	Semusa (Cemsa 74-228) (CIP 400004)		
	Mugamba (CIP 440034)		

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	Coffee:		
	Catimor Nyika coffee	Attractive to farmers	Nationally developed
	Cotton:		
	Makoka 2000 (MARS 92(87)12	It is largely recommended for Shire valley, a main cotton growing area. The seed supply system needs supporting to improve its availability. Further support area is plant protection chemicals for improved yields.	Nationally developed
	RASM 17 & IRM 81	They are recommended for a number of cotton main growing areas of Shire Valley, lakeshore plain areas and medium to high altitude plateau areas respectively. The seed supply system needs supporting to improve its availability. Further support area is plant protection chemicals for improved yields.	Nationally developed
	Tobacco:		
	KBM 20 (burley)	The variety possesses a number of positive attributes that address the production and disease issues. The yields range 3,000-4,000 kg per hectare.	Nationally developed
	KBM 33 (burley)	The variety possesses a number of positive attributes that address the production and disease issues.	Nationally developed
	Mkana-Chikhosi (burley)	The variety possesses a number of positive attributes that address the production and disease issues.	Nationally developed
	Banket A-1 (burley)	The variety possesses a number of positive attributes that address the production and	Nationally developed

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		disease issues.	
	MW 86-57 (fire cured)	The variety possesses a number of positive attributes that address the production and disease issues. The yields range from 1,500 - 2,500	Nationally developed
	Malawi Western (fire cured)	The variety possesses a number of positive attributes that address the production and disease issues.	Nationally developed
	MTRA 88 (flue-cured)	The variety possesses a number of positive attributes that address the production and disease issues. The yields range from 1,500 - 2,500	Nationally developed
	MTRA 92 (flue-cured)	The variety possesses a number of positive attributes that address the production and disease issues.	Nationally developed
	COKER 347 (flue-cured)	The variety possesses a number of positive attributes that address the production and disease issues.	Nationally developed
	KE 1 (flue-cured)	The variety possesses a number of positive attributes that address the production and disease issues.	Nationally developed
	Production Technologies:		
	Maize:		
	Application of Actellic Super Dust and Bifenthrim to control larger grain borer (LGB)	For effectiveness, an integrated post-harvest management strategy needs to be promoted.	Nationally developed
	Application of Goucho-T to control maize streak virus (MSV) disease	Wide spread use of the method is needed hence demonstrations are needed	Nationally developed

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	Livestock:		
	Cassava silage for dairy cows	Known for its high milk productivity enhancing potential for as high as 30% increases. It is made from tubers, leaves and young stems.	Nationally produced
	Chitedze liquid feed for dairy cows	Known for its high milk productivity enhancing potential for as high as 30% increases. It is made from cane molasses, urea, water vitamin and trace minerals.	Nationally produced
	Agricultural Processing:		
	Fruit juice extractor	This extractor can be used on both indigenous and exotic fruits. It has a high efficiency level (75-85%) and it is easy to use (including gender friendly)	Nationally developed
	Cassava starch processor	Commercialization of the processing needs to be done but bigger investments are needed. Invest in research into a bigger processor	IITA
	Vegetable oil extractor	This extractor can be used on both indigenous and exotic fruits. It has a high efficiency level (75-86%) and it is easy to use (including gender friendly)	Nationally developed
	Macadamia nuts processor (dehusking, dehulling, frying sorting and picking)	The areas growing macadamia are expanding thus the technology will improve value addition on farm level	Nationally developed
	Utilization Technologies:		
	Groundnut sheller	This would cut down household labour demands and support expansion of	Nationally developed

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		production; could be adapted in many places	
	Maize sheller	This would cut down household labour demands and support expansion of production; could be adapted in many places	Nationally developed
<i>Technology dissemination and extension models</i>	Promotion of farmer to farmer extension approach	The practice is straight forward since it requires identification of model farmers who lead by example in adoption of a technology. In all situations there are farmers that are exceptionally good at what they do hence the best for taking up this role.	Local initiative (Malawi) as part of new government (Ministry of Agriculture) policy.
	Promotion of district agricultural extension service system (DAESS)	This is a system that will ensure participatory farmer involvement in the extension system and also being more unifying (coordinating) of service providers at district. This would also contribute to increasing stakeholders' awareness on the new agricultural policy to implementers.	National initiative
	Promotion of village technicians on drug management and administration	There are basic livestock drugs whose administration does not demand a specialized person. The chicken vaccination is most critical to curb high mortality rates. Chickens are found in abundance almost in every village hence a massive vaccination would make a difference.	Initiated within Malawi under a livestock project (Basic Animal Health and Disease Control Project – Malawi/German Governments [early 1990s])
	Promotion of conservation agriculture (embracing minimum/zero tillage, compost manure, rainwater harvesting, mulching and herbicides	Minimum tillage and herbicide usage cuts on labour demands ideal for households infected/affected with HIV and AIDS	Adapted to Malawi situations

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	usage)		
	Intensification of agroforestry technologies (under-sowing of <i>Tephrosia vogelli</i> , improved fallows, systematic interplanting of <i>Feidherbia albida</i> , alley cropping)	Declining soil fertility is faced across the country and affecting other countries as well.	Adapted to Malawi situations
	Expanded farm mechanization	Introduce demonstrations on use of farm machinery for reduced drudgery (such as cultivator – select association/cooperative sites)	Adapted to Malawi
	Gravity-fed river diversion irrigation system	Ideal for bringing about multiple cropping in a year. It has a low operating capital requirement	Indigenous knowledge in use for a long time
Farmer Empowerment	Development of farmer cooperatives and associations	Addressing marketing aspects in these associations/cooperatives (including marketing studies/Technical assistance to associations and cooperatives managements to support their marketing strategic planning)	Old national idea that is resurfacing
	Training provision to farmers (in various crucial topics including group dynamics, training for transformation, leadership and technical areas).	Focus could primarily be on already organized groups (associations/cooperatives) to build capacity on technology use and adoption; conduct training of trainers (TOT) for staff as a precursor to farmer training	Old system of capacity building
	Promotion of value addition in the production system	Provide a ‘value addition’ fund to support potential investors into the processing technologies. Link it to high producing associations/cooperatives	Adapted to Malawi
	Community managed	There are always more potential beneficiaries	Adapted to Malawi

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	microfinance operations (savings, loans, investments)	than the funding levels hence increased capital injection is a requirement for diversified enterprise development	
	Advocacy work supported by research work (such as the Civil Society Agriculture Network [CISANET])	The national and district stakeholder panel works, national budget tracking, creating better understanding on approaches to carrying out effective advocacy	Adapted to Malawi
Agricultural education	Promotion of research work at universities (mainly Bunda College)	Intensify crop research (including indigenous crops), irrigation and farm mechanization; Support development of infrastructure enabling research work; expand outreach work to promote technology transfer and adoption	
	Scholarships for specialized courses	There are a number of specialized expertises in short-supply to the agricultural sector. Funding of students at local universities to undertake these at bachelors and postgraduate levels (MSC and PhD) as well as tailor designed short courses.	
	Adult literacy programme	Focus on establishing models within associations, in 'model villages' and as part of district agricultural extension service system (DAESS)	Adapted to Malawi
Agricultural inputs and market promotion	Promotion of credit in-kind (pass-on) scheme in crop seed multiplication and livestock	The system is already known in many programmes hence a lot of room for up scaling. Capital injections are required and support to reviewing and developing more sustainable community-managed credit	Nationally practiced

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		revolving fund systems. Furthermore, a more comprehensive review of the inputs system could be supported to define a more pragmatic solution to input supply constraints.	
	Market information collection and dissemination to end users at farmer and association levels	Support increasing number of markets covered and expand to inputs market information	Adapted to Malawi
	Private sector development, agro-dealer operations	This works on aspects of agro-dealers training on business management (and product handling) and credit guarantees covering agro-dealers getting loans from input suppliers and cash loans. There are many areas unattended to.	Adapted to Malawi

b. Malawi's priority technology needs:

In spite of there being numerous of technologies developed, there are still some critical technological gaps. There is a lot of dynamism in the technological world and for diseases and pests. Additionally, the ever changing market needs call for continued changes on the technologies under promotion. Based on the consultation process, the main technological gaps are as summarized in Table 2 below.

Table 2: Malawi's technology gaps

Definition of Technology Gaps
Limited breeding on potatoes (with no tissue culture laboratories)
Absence of technology to control banana bunchy top
Absence of use-specific cassava varieties (differentiating between those for processing starch [requiring large tubers] against those for fresh consumption through the market [requiring more tubers])
Absence of technologies for prolonging shelf lives for some crop seeds such as soybeans
Absence of cost-effective cotton pest control technologies
Absence of alternative pest control technologies in vegetables (leading to high chemical usage)
Absence of disease control technologies for stem borer, coffee berry disease and nutrition balancing in coffee trees
Limited area specific fertilizer recommendation rates (in response to ever changing soil characteristics)
Limited usage of scientifically adapted conservation farming/agriculture technologies
Inadequate availability of appropriate (including cost and usability) mechanization technologies that would increase value addition and work efficiency at farm level
Inadequate livestock breeding activities
Limited appropriate (in terms of cost and usage [including gender friendliness]) irrigation technology options

3.3 Major constraints and opportunities in technology generation, dissemination and adoption

3.3.1 Major constraints in technology generation and dissemination

The situation analysis work reveals existence of multiple constraints to the technology development and dissemination processes in Malawi. These constraints are found at different levels of the development system and affect stakeholder groups differently as well. It is nonetheless important to indicate that the public and semi-public bodies are more constrained than the private, CGIAR and NGO organizations. Additionally, some constraints are more generic than others across organizations. Thus, summarized below are some of the critical constraints facing technology development and dissemination.

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Generic Constraints:

Stakeholders' consultations under the study revealed that these generic constraints affect both technology generation and dissemination (presented in their order severity):

a. Inadequate staff capacities

Most government departments consulted expressed existence of serious staff capacities limitations. This problem has emanated from inadequate numbers of people filling the existing positions and also poorly trained manpower. In this respect, some departments such as Land Resources Conservation and Irrigation reported operating at around 50% and 44% below established staff capacity levels respectively. This capacity problem partly emanates from inadequate numbers of bodies in post as a result of deaths, resignations and retirements. The problem is also caused by limited training programmes and this is more serious amongst the technology dissemination bodies.

Realizing that the government is the focal point for technology development and transfer operations in the sector, this staffing problem has an adverse effect on the performance of other stakeholders such as NGOs, CGIARs and private sector. For instance, seed inspection and certification by government researchers is at times not timely and adequately undertaken due to poor staffing situation in DARS. Farmers also fail to receive the necessary technical backup services due to the staffing constraint. In this respect, the NGOs heavily rely on government field extension staff for technology dissemination.

b. Funding limitations

This is another acute problem currently existing in the public and semi-public bodies. The allocation of the funds for operations in technology generation and transfer has largely been on the downward trend in the past decade. Some scientists reported receiving funding levels of as little as MK 30,000 per month, an amount too little for any research work; and the technology transfer offices lamented over similar serious funding problems. Within the NGOs and associations, funding is also a critical issue. For instance in one NGO limited available budgets resulted into failure to provide, according to plans, a milk cooling facility to dairy farmers and a cut down on the number of developed gravity fed river diversion schemes (from 10 to 1). In the former case, the communities whose dairy animals are multiplying quickly will not reap maximum benefits from the project. ASSMAG, just like many farmer-managed bodies also reported serious financial constraints.

c. Poor infrastructure in agricultural institutions

Observations as well as descriptions from staff members of most public and semi public institutions clearly revealed existence of extremely dilapidated research infrastructures. Laboratories, green houses and other structures are in unusable

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conditions and associated equipments in these facilities are missing and/or are inadequate for meaningful operations. Another key missing infrastructural type relates to computers. In a world of technology, it is inevitable to keep abreast with use of modern computers and laboratory equipments. The Department of Agricultural Extension Services (DAES) lacks modern appropriate and functional communication equipment (audio and visual as well).

At NRC, the absence of laboratories hampers provision of adequate educational courses in, inter alia, chemistry and biology hence weakening the quality of diploma certificates offered by the institution as compared to those that were trained at other institutions with adequate facilities. Bunda College is greatly pressed on the students' hostel accommodation.

d. Transport shortages

In most of the areas, mainly public and semi-public there is an acute shortage of transport. The bulk of the existing fleets of vehicles are very old hence significantly contributing to high running costs but most importantly hampering effective and efficient mobility to deliver services by the institutions.

e. Bureaucratic government systems

Institutions supporting technology generation and dissemination operate in an environment suffering from some bureaucratic government system. More often than not, there is limited appreciation from most officials in the system of the cost implications of their slow and procedural attitudes. Agriculture in Malawi is very seasonal in nature, thus support need to the sector should always be timely given. For instance research annual agendas have been derailed due to untimely and uneven funding not respecting the cash flow requirement of a scientist.

Technology Generation Constraints

In the order of severity, technology generation faces three constraints defined below:

a. Limited collaboration amongst researchers and also with extension workers

The general picture from the study is that there is limited working relationship amongst scientists from different institutions (public, semi-public, international and private institutions). One fundamental cause of limited working relationships amongst research bodies is the variations in resource endowment, mainly finances. In particular, public and semi-public institutions fail to effectively work with international and private bodies. The international and private research bodies do not appropriately extend their resources with the public and semi-public research institutions to boost their collaborative work.

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Additionally, the problem arises in that researchers fail to closely work with extension workers to jointly work on priority problem areas of the farmers. This limits the development of technologies that would be readily disseminated to farmers and with enhanced acceptability by these end users.

b. Shortages of germ plasms/breeding materials

The shortage of breeding materials remains a challenge to technology development. The study revealed that good breeding materials are missing in some crops such as Irish potatoes. In some instances, some of the existing materials are so mixed that their purity is lost hence need to have new breeder seeds which are not readily available in the country. Some planting materials/seeds shortages arise due to outbreaks of diseases and pests which warrant development of resistant varieties such as outbreak of banana bunchy top disease. There are specific crops which are handled by the semi-public bodies which lack technological development support from the Ministry of Agriculture. In this regard, sugarcane research is not handled by the Ministry much as smallholder farmers are actively being involved in its production. Currently the technologies in use are largely brought into the country from South Africa and Mauritius.

Similarly, the livestock sub-sector largely suffers from some serious shortages of breeding stock for a number of livestock types such as goats, cattle, pigs and others. This picture is more serious for the public sector hence research work in this area is impeded by this development. For instance in goats, the demand for improved bucks and dairy goats outstrips the supply from some limited breeders in the country.

c. Skewness of technologies towards some specific areas:

It was revealed from the study that some of the commodities enjoy more technology generation than others. This was found to be the case for cereal more than other crops. For instance, Irish potatoes have received less attention than cereal crops. This skewness also exists within the same crop types for instance beans have received more focus than chick peas and soy beans. Irrigation and mechanization are other areas that has had limited number of developed technologies despite being considered important.

Technology Dissemination Constraints

Fundamentally, technology dissemination is constrained by the existence of two ranked severe factors:

a. Poor technology transfer and adoption mechanism

The stumbling blocks to adoption are numerous but one critical one is poor technology dissemination systems. There is limited collaboration between research and extension staff around the area of technologies dissemination. The research-

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extension-farmer linkages which were at one point initiated under a donor-funded Agricultural Services Project (ASP) were discontinued beyond the project life.

As noted under technology generation, the limited collaboration between research and extension officers play a crucial role in the limited adoption of newly developed technologies. Understanding of the technologies by the extension officers is limited due to the break in working relationship between the developers and disseminators. Due to this weakness, some of the technologies on the shelf are still unknown to the farmers.

Limited adoption is also attributed to the farmers' poverty levels which make some of the technologies look expensive to farmers. Illiteracy remains one of the factors contributing to farmers' failure to appreciate good quality technologies. This is coupled by their limited entrepreneurial/business orientation a situation which further erodes their commitment to investing into new technologies such as mechanization (including value addition).

b. Undeveloped marketing systems

Attractive marketing opportunities serve as a catalyst to adoption of new and improved technologies realizing that agricultural producers make rational decisions. The problem in the country is that markets for most products are underdeveloped which inhibits ambition of farmers to expand their enterprises. The associations and cooperatives formed for the various products possess limited knowledge and skills to organize their marketing operations.

3.3.2 Major opportunities in technology generation and dissemination

Notwithstanding the aforementioned constraints, there are some opportunities existing in the promotion of technology generation, dissemination and subsequent adoption by end users. The following are the existing opportunities in this regard.

a. Existence of multiple stakeholders

The country's agricultural sector is lucky to have numerous players supporting it from the public, semi-public, international and private bodies. This scenario provides the opportunity of synergism in the way work on technology development and transfer would happen. The only requirement lies in improving the level of coordination amongst these stakeholders to avoid duplication, overlaps and inconsistency. Furthermore, by having a wide range of end-users of technologies, it is possible to try different approaches to technology dissemination, including introduction of commercialization of technology dissemination especially for the commercially oriented agricultural systems. In this regard, the seed multiplication systems offer great commercialization opportunities especially for other crop types than maize and tobacco which have already gone commercial.

b. Conducive policy environment

The government strives to create an enabling environment on all policy fronts (including the macro-economic situation) hence the introduction of initiatives of any form would benefit from this development. A liberalized market system offers opportunities for creating demand for the various prospective users of technologies and dissemination tools.

The development of the decentralization policy provides room for increased involvement of lower level implementation structures. Participatory processes could now be put to intensive use within this decentralization framework; the participatory research and district agricultural extension service systems already offer such entry points.

The existing policies and well articulated development priorities of the country will only be meaningful if they are implemented. For instance, the importance of agricultural diversification has been totally accepted for a long time, including supporting it with relevant studies. However, there is a general realization that such diversification ideas are not aggressively put into practice. Therefore, in order to take advantage of sound policies and priorities, it is imperative to 'walk the talk' by practicing these.

c. Return of increased donor support to the country

The donor community's confidence in Malawi's development agenda has returned due to the government's appropriate policies, human rights and good governance issues. This has also manifested itself in Malawi's debt cancellation by most donors. This development offers an opportunity lobbying for more resources for technology generation and dissemination.

d. Available on-shelf technologies

There being already several promising technologies on-shelf, the dissemination process could be scaled up immediately so long as there is some reorganization of the dissemination system.

e. Availability of existing training institutions

Institutions for building capacities in various fields exist in the country and these would be put to meaningful use once the funding situation and infrastructural needs are addressed. Furthermore, the outputs of the educational institutions, mainly Bunda College of Agriculture offers an opportunity to the Ministry of Agriculture and Food Security and other agricultural institutions to increase their staff complements through deliberate efforts on increased recruitment of these people as opposed to the trend of having more of them joining the educational sector as teachers.

f. Diversity in agro-ecological zones

The country enjoys a diversity of agro-ecological zones which offers an opportunity of promoting an equally diverse range of technologies. The high irrigation potential also allows the promotion of different irrigation and other associated agricultural technologies in different geographical locations.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusion

Malawi's agricultural sector has a number of stakeholders undertaking work on matters of technology generation, dissemination and adoption. These are from the public, semi-public, private, international, farmer and NGO sectors. Furthermore, it is apparent from this work that most organizations involved in technology generation and dissemination are working on a wide range of the sector's needs.

The study has also revealed that there are already hundreds upon hundreds of technologies already developed in Malawi mostly on crop varieties. However, some sub-sectors have enjoyed less progress on technology generation and dissemination than others such as soil and water conservation, irrigation and livestock.

It was also clear from the consultations that some technologies and practices/approaches are more popular than others. This was manifested in the number of organizations handling such technologies and practices/approaches. For instance, a 'credit in-kind'/'pass-on' system is working in most of the consulted organizations.

With many players operating in the agricultural sector, the issue of coordination and networking is crucial. It is however unfortunate that the coordination mechanisms are rather disjointed on the part of technology dissemination. On technology generation, the ATCC plays a significant role in the bringing together concerned players. Nonetheless, the coming together under ATCC is not good enough if such close working relationships were absent during the research work. It has already been acknowledged that due to serious disparities in resource endowment, DARS has failed to closely work with other bodies much as such was the foreseen ideal situation.

In spite of many technologies being developed, the pace at which these are taken to end users leaves a lot to be desired. The dissemination and promotional activities seem to lack the appropriate drive from both the technology generator and those disseminating them, except for the private sector products such as hybrid crop seeds. Clear lamentations over the weak linkage amongst the research, extension and community groups in technology dissemination were heard from many institutions. This weakness defeats the purpose of research and development works.

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It is also very clear that there has been very little consideration in most organizations to carry out assessments/evaluations on the performance of the research and development work the country has done as well as technology dissemination practices. As such, no concrete evidence exists on those technologies mostly sought after by the end users. In the absence of such assessments/evaluations, it is most difficult to determine the necessary technology generation and dissemination improvement strategies. The assessments/evaluations would pinpoint the benefits and costs associated with the research and development works. It is, nonetheless, clear from the study that benefits have accrued to technology end-users but these remain narrow in scope due to limited adoption.

Lastly but not least, the consultations have revealed that numerous limitations to technology generation and dissemination exist. The public sector has of late been less effective in undertaking its mandates due to serious obstacles that have included financial and infrastructural constraints. The semi-public and farmer organizations, such as associations, also face serious limitations in their works. The imbalances in resource availability amongst the different players dilute the power of synergies that would have been exploited if all stakeholders were close to being equally endowed with resources. The poor state in which the different forms of infrastructures are also negates productivity of technology generation and dissemination bodies.

4.2 Recommendations

Based on the situation defined in this report, there are a number of areas where improvements are needed. It is obvious that by virtue of there being multiple stakeholders, each of the stakeholders has a role to play in creating an enabling environment for improved technology generation and dissemination. Thus, the following are some of the recommendations considered appropriate to contribute to an improvement in the technology generation, dissemination and adoption.

a. Comprehensive review of past research and development

It is hereby recommended that in order to understand the performance and suitability of previous research and development work, some comprehensive assessments/reviews/evaluations should be conducted to determine their contributions to the country's development process.

b. Increased diversity in research agenda

The picture is clear that technologies are skewed towards specific commodities than others. For instance cereals and legumes have more technologies developed than land resources conservation and irrigation, just to mention a few. Even within each commodity group, there are some crops that have received more research attention than others. It is thus recommended that more emphasis should be placed on areas where technologies are limited. Additionally, crop varietal research should focus more attention to other crop

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seeds than maize seed which has received much attention. To effectively bring about this diversity, it is important that the level of collaboration amongst research bodies (public, semi-public, international and private) is increased. Additionally, extension bodies and farmers (end users) should be integral to the definition of these broader research agendas.

c. Rehabilitation of infrastructure

With more of the infrastructure falling apart in most public and semi-public institutions, it is recommended that a comprehensive rehabilitation programme should be developed. In due cognizance of large capital outlays expected to be expended, it is proposed that the rehabilitation works should be phased over a period of years. In this regard, both government's own and donor resources should be used for such works. The example of Ministry of Education getting funds for the rehabilitation of four (4) secondary schools should be emulated by Ministry of Agriculture and Food Security. Under this measure should be covered restocking of the Agricultural Communications Branch of the DAES with modern communications equipments.

d. Revival and intensification of research – extension –farmer linkage and general coordination/networking

The improvement of technology dissemination will call for a revamp of the collaboration between research and extension staff across all institutions. The idea of researchers handing over technologies to the extension people at the outset of the dissemination process should be substituted by an arrangement where these parties jointly promote the technologies up until the extension specialists are able to comfortably manage such technologies on their own. On the part of DARS, it is hereby suggested that through the Technology Transfer Section, a fully fledged and operational arm of DARS gets established for championing technology dissemination. Related to this move should be the full operationalization of the concept of Technology Transfer Committees in the department. It is inevitable in this regard to employ all possible participatory practices on technology generation and dissemination. This picture could be met if DARS resources availability could be improved.

Related to this linkage is the need to generally improve on the coordination and networking amongst key agricultural stakeholders. With the existence of Civil Society Agriculture Network (CISANET), it is recommended that it should be entrusted by all stakeholders to perform the networking and coordination functions on behalf of all stakeholders. Strengthening its capacities and redefining their terms of reference would realign their work towards serving this purpose.

e. Increased support to the public sector by non-public actors

It is very clear from the findings that the private sector, CGIARs and some NGOs are relatively better endowed with resources (both materials and finances). It is recommended that there should be increased resource sharing amongst the three (3)

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parties. For instance, most seed companies use the seed testing laboratories in public research stations. The picture could be improved if the private companies assumed part of the responsibilities of rehabilitation of laboratories and equipping them with relevant materials. For the educational institutions, it is also recommended that public departments benefiting from the training programmes at the semi-public institutions should make contributions mainly in form of infrastructure, inter alia, computers, transport and laboratories.

f. Capacity building for critical areas

One of the limitations of technology generation, transfer and adoption is limited capacities in the institutions. The public sector has lost some critical experts due to resignations, deaths and retirement. Similarly, the farmer associations/cooperatives and farmer groups have inadequate knowledge and skills to ably manage and perform key activities such as marketing. It is imperative that such capacity building endeavours include the farmers as end-users of the technologies. It is thus recommended that a comprehensive capacity building programme (including hands on practical mentoring) should be undertaken and sustained. In this regard, the agricultural educational institutions should be fully supported with necessary investments covering areas of students' accommodation and classrooms/lecture rooms, computers, and library services, amongst others.

g. Media field days

In order to publicize the accomplishments in technology generation, dissemination and adoption as well as the critical problems faced by these institutions (such as falling apart of infrastructure), it is recommended that annual media field days be adopted.

h. Agricultural Development Programme (ADP) coverage

As the government through the Ministry of Agriculture and Food Security in association with other stakeholders are developing the ADP, it is recommended that the programme should cater for the needs of a wide range of key stakeholders in agriculture and not only for the public sector. In this regard, the public sector should only get support (financial and material) in areas of its core functions whilst the other support should be defined for other stakeholders such as NGOs, farmers associations, agricultural coordinating bodies and networks, just to mention a few. This approach will ensure addressing the resource endowment discrepancies amongst the various key stakeholders in the sector. The modalities of funding could be thrashed out at the ADP design stage.

i. Bureaucratic government systems

It is recommended that government should review the implications of the bureaucratic approach to dealing with agricultural sector programmes in terms

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funding, recruitment and any other decision making processes. This review should also touch on the sustainability relating to running (including funding using internally generated revenues) key agricultural institutions.

4.3 Recommendations on a strategy for an entry point for SADC MAPP activities

The SADC MAPP activities would have to be integral to the existing mechanisms that support technology generation, dissemination and adoption. In this regard, it is recommended as follows:

a. Interim Entry in agriculture of the SADC MAPP Activities

At the outset, it is inevitable for SADC to initiate discussions with the Ministry of Agriculture and Food Security in order to get the appropriate strategic directions of the government on the programme support needs. In view of the on-going ADP development process, it is envisaged that the Ministry would define only interim support needs and areas especially those ‘best-bet’ areas defined herein and/or those that would come up through such consultations. The interaction would also clarify on the financial disbursement procedures. It is also expected that such interaction shall provide some direction on the support modalities to the non-public institutions, mainly the NGOs, farmer associations/cooperatives and agricultural education institutions.

b. Integration into fully developed Agricultural Development Programme (ADP) period

It is the Ministry’s desire that once the ADP is fully developed, it would be the main programme framework under which support to the agricultural sector will be mobilized. Thus, it is inevitable that all SADC MAPP activities are mainstreamed into the ADP and implemented as part of it. This should be easy because the two programmes focus on similar result areas (pillars). This situation, therefore calls for proper synchronization of the programming process of the two both in terms of timing and scope.

c. Limited coverage of initial work

It is important that SADC MAPP initially starts on a small scale using the best practices already identified. In this regard, work could be initiated under the public, NGO and farmer organizational levels. Scaling up could then be annually made based on the experiences of the implementation processes. On the technology generation side, research grants could be provided to aide the priority research themes. On the educational front, initial specialized short courses could be supported to strengthen capacities in institutions.

d. Further specialized scoping studies

It is important to critically examine and initiate specialized research work to generate ample information on some specific areas which would help on improvements on

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technology generation and dissemination. It would, therefore, be appropriate to determine those areas where specialized studies are deemed necessary. For instance, there might be need to undertake a review of the achievements and impact of the research technologies released so far so as to define technology gaps and scope for scaling up. There could also be some studies to help understanding the role of farm level mechanical value addition (processing) operations as a means to boosting agricultural production.

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Annex 1: Terms of Reference



Terms of Reference

Consultancy for National Situation Analysis

SADC Multi-country Agricultural Productivity Programme (SADC MAPP) Preparation

1. Background

The Multi-country Agricultural Productivity Programme (MAPP) was conceived in consultation with NEPAD, FARA and other stakeholders in the African and international community together with the World Bank's Environmentally and Socially Sustainable Development (ESSD) Network. The objective of MAPP is to improve agricultural research, technology development and dissemination. The MAPP vision seeks to improve the development and uptake of agricultural technologies to meet the Millennium Development Goals and in support of Pillar 4 of NEPAD's Comprehensive Africa Agricultural Development Programme (CAADP). MAPP is implemented in the Africa Region by the Forum for Agricultural Research in Africa (FARA) guided by the Framework for African Agricultural Productivity (FAAP) developed by FARA.

In Southern Africa, MAPP is currently being developed by the Food, Agriculture and Natural Resources (FANR) directorate within the Southern African Development Community (SADC) and the programme is referred to as the SADC MAPP.

SADC MAPP will have six components:

- Component 1: Scaling out farmer empowerment and market access
- Component 2: Research and technology generation
- Component 3: Farmer led advisory services and innovation systems
- Component 4: Education, training and learning systems
- Component 5: Knowledge, information and communication
- Component 6: Institutional development and capacity building

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As a sub-regional program, SADC MAPP will provide a mechanism through which SADC Member States will be able to work together and pool resources to undertake collective action on issues of common interest and to mobilise global knowledge. SADC MAPP will help to establish a strong sub-regional platform to support and complement the activities of agricultural research and extension programs.

SADC MAPP is in the final stages of preparation following extensive sub-regional consultations. Work is required to verify the design and to determine suitable entry points for the programme so as to move quickly into implementation. In addition, the final choice of appropriate implementing agency for the programme needs to be determined in order to ensure the efficient disbursement of resources to beneficiaries. These national level consultations will provide key stakeholders a further opportunity to contribute to the programme design.

2. Description of the Assignment

Implementation of SADC MAPP requires the active participation all major stakeholders in the agricultural development process; those from agricultural research, extension, agricultural education, farmer organisations, agricultural NGOs and the private sector. In order to find the best entry point for MAPP, there is need for the consultant to consult with all these stakeholders and carry out a situation analysis providing details of smallholder farmers' organisations, research and extension organisations including NGOs, educational institutions, private sector and agribusiness linkages; communications methods and tools; and to identify promising technologies including indigenous knowledge that can be promoted and scaled out, as well as to identify technology gaps and research priority areas.

SADC MAPP is seeking to identify priority areas for intervention and activity areas for promotion in all the six components, and to scale out to other countries in the region examples of 'best practice' within the Programme's six components. This will be done through various funding mechanisms. The consultant will therefore review outstanding examples of 'best practice' in his/her own country and develop outline proposals as to how these might be scaled out elsewhere in the region. Scaling out does not need to involve all SADC countries but must show the potential for engaging a realistic and appropriate partner (or partners) in one or more collaborating countries.

The findings from the situation analysis will need to be validated in a workshop. The consultant will therefore be required to liaise with the SADC MAPP national contact person convening the national workshop to ensure that all representatives of stakeholder institutions mentioned above attend and actively participate in the workshop.

The number of participants to the national workshop should reflect a compromise between representation from as broad a range of stakeholders as possible and the need to progress quickly through the agenda and arrive at a consensus on the consultant's report. The available budget will also limit the number of participants. It is essential that all

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participants have excellent field experience of operational programmes in their country, and, ideally, have good regional knowledge as well.

4. Expert Profile

The expert involved in the consultation will meet the following criteria:

- A Post graduate degree, with preferably a PhD and minimum an MSc in agricultural or social sciences.
- 10 Years field experience, with evidence of successful involvement in at least two or the following areas; agricultural research, technology generation, dissemination and adoption
- Demonstrated field experience in implementing successful development activities involving partnerships with various stakeholders
- Relevant experience in developing countries, particularly eastern and southern Africa
- Demonstrated administrative ability and good public relations
- Computer literate

The national consultants together with the SADC MAPP national contact persons will jointly participate in an induction meeting convened by the Director of SADC FANR and the SADC MAPP Core Team at the SADC FANR offices in Gaborone. This meeting will agree on a common methodology to be followed at each country consultancy. This will be followed by the in-country situation analysis by the consultant and then the national workshop. The consultant is expected to prepare a proposal indicating the desirable level of effort to a maximum of 30 days on developing and implementing the in-country activities.

5. Reporting

The consultant will prepare the situation analysis report including the main findings and conclusion and incorporating the comments and suggestions from the stakeholders. The reports shall be written in English/French/Portuguese on A4 paper, using Word and Excel format.

The cover page of the reports will carry the date of submission of the report, and mission dates in brackets.

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 Director FANR at the SADC Secretariat. The report does not necessarily reflect the views of the SADC Secretariat.”

The reports will include the elements mentioned above and the following annexes:

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- Terms of reference of the consultant
- Methodology applied by the consultant
- List of persons contacted
- List of workshop participants, their organisations and their contact details
- Literature and documents consulted
- Comment from all key stakeholder representatives on the draft report

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ANNEX 2: List of Persons Contacted

Serial No.	Name of Person	Organizations, Designations & Contact Details
1	M. Siambi (PhD)	Country Representative, ICRISAT 265 1 707057/067/071
2	E. Manda (Ms.)	National Coordinator, IDEAA/MACE 265 1 759536/065
3	F. J. Kawalewale	Executive Director, AISAM 265 1 775982/971
4	N. M. Mahungu (PhD)	SARRNET Coordinator, IITA 265 1 707004
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9	T. Connell	Deputy Country Director, Concern Universal 265 1 822705 / 265 1 623761
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17	S.B.Gawamadzi	Principal monitoring & Evaluation Officer, DLRC 265 753049/ 265 1 755048
18	Z. Jere	Director, Total Land Care (TLC) 265 1 757090/092
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25	S. Chakeredza	Education Fellow (African Network for Agriculture, Agroforestry and Natural Resources Education)/Fodder Specialist, ICRAF
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32	V.M. Wandale	Principle Agribusiness Officer, DAES 265 1 755522/ 265 1 752400
33	P. Kapondamgaga	Executive Director, Farmers Union of Malawi (FUM)
34	M. Phiri	Food Security Manager, World Vision Malawi 265 1 756484 / 1 757294
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