



Demand Analysis Report- Republic of Malawi



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Chapter I

An Overview of Country: Malawi

Malawi (officially the Republic of Malawi) in southeast Africa that was formerly known as Nyasaland is a small land-locked country surrounded by Mozambique to the South, East and West, Tanzania to the North and East and Zambia to the West. The name Malawi comes from the **Maravi**, an old name of the Nyanja people that inhabit the area. The country is also nicknamed "**The Warm Heart of Africa**". Malawi is among the smallest countries in Africa.

Its capital is **Lilongwe**, which is also Malawi's largest city; the second largest is **Blantyre** and the third is **Mzuzu**. It has a territorial area of about 119, 140 square kilometers of which agriculture accounts for about 61 per cent while forests occupy 38 per cent of the total area.

Geography

The Great Rift Valley runs through the country from north to south, and to the east of the valley lies Lake Malawi (also called Lake Nyasa), making up over three-quarters of Malawi's eastern boundary. Lake Malawi is sometimes called the Calendar Lake as it is about 365 miles (587 km) long and 52 miles (84 km) wide. The Shire River flows from the south end of the lake and joins the Zambezi River 250 miles (400 km) farther south in Mozambique. The surface of Lake Malawi is located at 1,500 feet (457 m) above sea level, with a maximum depth of 2,300 feet (701 m), which means the lake bottom is over 700 feet (213 m) below sea level at some points.

In the mountainous sections of Malawi surrounding the Rift Valley, plateaus rise generally 3,000 to 4,000 feet (914 to 1,219 m) above sea level, although some rise as high as 8,000 feet (2,438 m) in the north. To the south of Lake Malawi lie the Shire Highlands, gently rolling land at approximately 3,000 feet (914 m) above sea level. In this area, the Zomba and Mulanje Mountain peaks rise to respective heights of 7,000 and 10,000 feet (2,134 and 3,048 m).

Malawi's climate is hot in the low-lying areas in the south of the country and temperate in the northern highlands. The altitude moderates what would otherwise be an equatorial climate. Between November and April, the temperature is warm with equatorial rains and thunderstorms, with the storms reaching their peak severity in late March. After March, the rainfall rapidly diminishes and from May to September wet mists float from the highlands into the plateaus, with almost no rainfall during these months.

Malawi is composed of three regions (the Northern, Central and Southern regions), which are divided into 28 districts, and further into approximately 250 traditional authorities and

110 administrative wards. Local government is administered by central government-appointed regional administrators and district commissioners.

Malawi has a population of over 15 million, with a growth rate of 2.75%, according to 2009 estimates. The population is forecast to grow to over 45 million people by 2050, nearly tripling the estimated 16 million in 2010.

Economy

Malawi is among the world's least-developed countries. Around 85% of the population live in rural areas. The economy is based on agriculture, and more than one-third of GDP and 90% of export revenues come from this.

Agriculture accounts for 35% of GDP, industry for 19% and services for the remaining 46%. Malawi has one of the lowest per capita incomes in the world, although economic growth was estimated at 9.7% in 2008 and strong growth is predicted by the International Monetary Fund for 2009. The poverty rate in Malawi is decreasing through the work of the government and supporting organizations, with people living under the poverty line decreasing from 54% in 1990 to 40% in 2006, and the percentage of "ultra-poor" decreasing from 24% in 1990 to 15% in 2007.

Chapter II

An over view of Agriculture sector, policies, programmes, priorities

Agriculture sector:

The agricultural sector is the backbone of the Malawi economy supporting about 85 per cent of the population in terms of employment), accounting for 35 per cent of Gross Domestic Product (GDP), and accounting for 90 percent of foreign exchange. The agricultural production is heavily concentrated on crop production, predominantly maize and tobacco. Crop yields remain below potential and agricultural production and marketing have remained inefficient.

Importance of Agriculture in Malawi

- Since independence in 1964, the agricultural sector has remained the mainstay of Malawi's economy as it accounts between 36 and 39 percent of the GDP, employs about 80 percent of the workforce, accounts for over 90 percent of foreign exchange earnings, and contributes significantly to national and household food security.
- The agricultural sector has two main sub-sectors - the smallholder sub-sector contributing more than 70 percent and the estate sub-sector that contributes less than 30 percent to agricultural GDP. Smallholders cultivate mainly food crops such as maize, the main staple grain, cassava and sweet potatoes to meet subsistence requirements, while the estate sector focuses on high value cash crops for export such as tobacco, tea, sugar, coffee and macadamia. Smallholder farmers cultivate small and fragmented land holdings under customary land tenure with yields lower than estate sector. Among smallholder farmers, female headed household cultivate even smaller land holdings than male headed households.
- In Malawi, the total area under cultivation is estimated at 2.2-2.5 million hectares, of which more than 90 percent is in small farms. It is estimated that the potential agricultural land is about 4.7 million hectares suitable for rain-fed, dimba, or wetland cultivation, irrigated land, and plantations plus 0.9 million hectares of grassland. This means that about half of Malawi's land area can be cropped, of which only about half is currently under crops.
- Agricultural exports have remained undiversified, with little value addition. About 40 percent of the population live below the national poverty line (MK44 or UD\$0.3 per person per day) with 22.4 percent barely surviving. Socio-economic indicators illustrate the depth and intractability of poverty. For example, the levels of malnutrition remain high with 43.2 per cent of under-five children stunted and 22 per cent underweight.

- The country's macroeconomic performance has been strong for the past three years due to sound economic policies pursued by the government and good performance in the agricultural sector. Malawi has registered a real GDP average growth of 7.5 percent and average inflation rate of below 10.9 percent for the past five years.

Agriculture in Malawi plays an overwhelmingly important role in the economy. In the 2004 Malawi Economic Growth Strategy it is stated to account for 39% of Growth Domestic Product (GDP), 85% of the labour force and 83% of foreign exchange earnings. In 2010, the Malawi Confederation of Chambers of Commerce (MCCCI) states that agriculture is the mainstay of Malawi's economy and it contributes about 33.6 percent to the economic growth.

Malawi is a land-locked country with one of the highest population densities in sub-Saharan Africa. This allows only 0.23 hectares of land per person in rural areas. Most rural families rely on the staple crop- maize. Around 90% of the people are subsistence small farming households, agricultural yields are very low and Malawi has experienced several food crises in the past decades with staple crops being affected by dry spells and floods.

The main agricultural products grown by smallholder farmers are maize, tobacco, cassava, groundnuts, pulses, sorghum and millet, sweet potatoes and cotton, of which the main agricultural exports are tobacco, tea, sugar, cotton, rice and pulses.

Tea, sugar, tobacco and coffee are traditional export products that are largely grown by corporations and large scale farmers. It has been estimated that food crops account for about 70 percent of agricultural value added. Over time, in food crops, estimates indicate that cassava and sweet potatoes are becoming important crops in the food production basket, but the extent to which has happened is controversial. In cash crops, there has been a reduction in groundnuts exports, the traditional exports of tobacco, tea and sugar continued their dominance while pulses have emerged as important non-traditional exports.

Evolution of Agricultural Policy in Malawi

- Malawi's post-independence agricultural strategy has been characterized by a dual policy of attainment of national food self-sufficiency through enhancement of the smallholder agriculture and rapid economic growth through estate production with almost all major agricultural programmes, strategies and action plans being guided by the food security policy.

- From the mid-1980s, the Malawi Government reviewed its role from that of being both a policy formulator and implementer to that of policy regulator under the Structural Adjustment Programmes (SAPs). Through this, all restrictions on production of some commodities like burley tobacco by smallholder farmers were removed to accord them with opportunities to enhance their incomes. The other important policy reforms are the removal of agricultural input and output marketing controls, price decontrols, and the commercialization of parastatals, amongst others.
- In 1995, the government developed the Agriculture and Livestock Development Strategy and Action Plan (ALDSAP) to provide a framework for coordinating the implementation of various policy initiatives
- In 1999, the government undertook a comprehensive review of all agricultural sector policies under the Malawi Agricultural Sector Investment Programme (MASIP). Unfortunately, the review never translated into a coherent policy. Meanwhile, the sector has several sub-sector policy documents. These policies include the Land Resource Conservation Policy, the New Agriculture Extension Policy, the Research Master Plan, the HIV and AIDS Policy for the Agricultural sector, the Livestock Development Policy and the Irrigation Policy, amongst others.
- However, in 2007-2009, the Malawi Government formulated a sector-wide program, the Agricultural Sector Wide Approach (ASWAp) to harmonise investment and support programs in agriculture based on their highest potential for contributing to food security and agricultural growth in the next five years. The ASWAp is a prioritised results-oriented framework that focuses on food security and risk management; agri-business and market development; and sustainable land and water management. ASWAp is sector framework for implementing the agricultural components in Government Medium-Term Development Strategy such as Malawi Growth and Development Strategy I (MGDS I) and Malawi Growth and Development Strategy II (MGDS II).

Rationale for the Policy Development

The development of the National Agricultural Policy comes against the background of the fact that the sector has been operating without a coherent national agricultural policy. In this respect, the critical factors necessitating the development of the policy are as follows:

- ❖ Dynamics in the policy environment at the national and international levels have significant bearing on the agricultural sector.
- ❖ The strong linkages between the agricultural sector and other sectors and the implications for national economic growth and development.
- ❖ To provide a premise for the development of sub-sectoral or industry specific policies and legal frameworks. In the process, the policy aims at promoting sub-sectoral linkages which have failed to take place in the absence of an overarching sectoral policy;
- ❖ To provide an outline of institutional linkages amongst various stakeholders (public or private) which have a significant bearing on the agricultural sector.

Guiding Principles

- ❖ **Realignment to regional and international policies.** The Policy realigns itself to the regional and international policies on agriculture, climate change and environmental management issues notably the Comprehensive African Agriculture Development Programme (CAADP), an agricultural programme for the New Partnership for Africa's Development (NEPAD)/African Union (AU).
- ❖ **Responsiveness to gender issues in agricultural and rural development.** The Policy recognizes the need for gender equality as a fundamental value in provision of agriculture services to ensure equal participation of all gender categories.
- ❖ **Evidence-based decision making.** All stakeholders in agricultural sector will be encouraged to make decisions that are based on analysis of issues using internationally acceptable analysis tools and practices.
- ❖ **Policy and institutional harmonization.** The Policy seeks to promote harmonization of various sub-sectoral policies to eliminate overlaps and promote complementarities within the sector in line with the overarching national development aspirations.
- ❖ **Multi-stakeholder focus.** The Malawi Government's intention is that all the service providers who play key roles in the development of the sector are fully recognized especially as they actively take part in the implementation of guidelines laid down in this policy.
- ❖ **Responsiveness to HIV and AIDS** Considering the negative impacts of HIV and AIDS which contributes to the reduction of agricultural production, incomes and livelihoods the policy seeks to ensure that all programmes and projects mainstream HIV and AIDS issues.

- ❖ **Demand-driven approach.** In line with the democratization process and other national policies such as decentralization policy, this policy seeks to ensure that all services to the different farmers are according to their needs.
- ❖ **Building on the strength of previous policy initiatives.** The Policy builds on the national experiences in the implementation of various policy initiatives such as the Agriculture and Livestock Development Strategy and Action of 1994, the review of Malawi Agricultural Sector Investment Programmes (MASIP) in 1999 and the Agricultural Sector Wide Approach (ASWAp) in 2008.

Chapter III

An over view of allied sectors-

Horticulture, Animal Husbandry and Fisheries

Horticulture: Overview

Contribution of the Horticulture Sector to the Economy

The horticulture sector in general has the potential to complement the country's traditional cash crops of tobacco, tea and sugar in terms of contribution to national economy. In addition to national contribution, horticultural commodities such as fruits and vegetables have the potential to contribute to household nutrition, food security and income.

However, despite the potential that the fruit sub-sector has in contributing to nutrition, income and national economy, the sub-sector and horticulture in general has received little technical and financial support compared to the tobacco, tea and sugar industries.

Policy on Horticulture

The Malawi Govt. recognizes that expansion of horticultural production for agro processing is one of the strategies for increasing agricultural productivity. In an effort to enhance performance of the horticulture sector, the government emphasizes developing marketing and agribusiness management skills for the horticulture sector. Such efforts have the potential to contribute to development of horticultural marketing and food processing in Malawi.

The Horticultural Development Organization of Malawi (HODOM) was established with the mandate to spearhead implementation of the strategy. Unfortunately, HODOM's activities are seriously curtailed to almost closing down due to financial constraints.

Main features of the Malawi horticultural sector

- The horticultural sector in Malawi is small and the potential for horticultural production and marketing still remains unexploited due to several factors.
- Disorganised production and marketing are major features of the sector. Essential support services needed to develop the sector are inadequate.
- Therefore, although horticulture is currently among the fastest growing sectors in most sub-Saharan African countries, in Malawi, the volume of horticultural production is very low and does not exceed 5% of the total agricultural output.
- Services such as research, extension, agroprocessing and phytosanitary services need to be strengthened to support entrepreneurs in the sector.

- A concerted effort from public and private stakeholders can create a conducive environment for vegetable production.
- The private sector can seize the opportunity to develop the sector together with government.

Constraints to Fruit Production

Several constraints to fruit production and marketing can be categorized as follows:

Policy related

- Absence of policy and clear strategies on horticulture;
- Limited government and private sector support on production, marketing and processing

Technical/technological

- Lack/inadequate agronomic and/or technological knowledge on production;
- Low production levels and poor quality products due to poor germplasm;
- Lack or inadequate supply of tree seedlings for increased production;
- Limited expertise on post-harvest handling, and marketing of horticultural products.

Marketing

- Lack of organized, poor marketing infrastructure and market information system in addition to imperfect markets;
- Poor infrastructure- road condition and road network;
- Low prices offered on horticultural commodities due to low quality and inefficient markets.

Institutional constraints

- Inadequately trained and specialized staff in research and extension with respect to horticulture marketing and processing;
- Lack of entrepreneurship;
- Ineffective and inefficiently managed farmer organizations due to poor leadership and management skills of executive members;
- Limited and in some cases lack of access to financial credit by entrepreneurs in the horticulture sector and high interest rates whenever the financial credit is available.

Mushroom Production

Africa produces very small quantities of cultivated mushrooms, less than 1% of the world's total tonnage. However, Malawi and the rest of Africa have high potential for widespread production because of availability of abundant materials from agriculture wastes that could be used for mushroom production. All that is needed is to popularize this crop and build capacity in the art

of mushroom farming. With mushroom cultivation, ordinary people from communal areas, peri-urban dwellers and commercial farmers can earn considerable income and employ many others.

Mushroom is considered as one of the important food items since ancient time and its consumption continues to increase for its significant role in human health, nutrition and diseases. A number of mushrooms are reported to have medicinal properties.

In spite of the potential of mushroom growing in improving livelihoods of people and the ease of accessibility of materials for production, mushroom cultivation in Malawi is still in its infancy. Despite having the largest commercial demand, button mushrooms are not being commercially cultivated in Malawi.

Malawi Forestry: overview

There has been a net decline in forest lands over the last two decades especially on customary land. This trend is continuing at the rate of 1.6 % per year. The main causes of deforestation and forest degradation are uncontrolled tree felling for fuelwood for curing tobacco in the smallholder and estate sectors, opening up of new gardens and farming areas, firewood for commercial purposes, infrastructure development and shifting cultivation. Protected forests have overall been effective in conserving biodiversity, but there is growing pressure for cropland and wood fuel.

Malawi's forests and provide about 94 percent of the country's energy requirement for industrial and domestic uses. With wood fuels providing 94 % of energy in the country and no viable alternatives in site, the ever-increasing demand for wood fuel will have a very profound effect on forestry sector.

Increasing globalisation, concern for climate change and interest in preserving biodiversity are the global themes will play an important role in shaping forestry sector in Malawi. The forest outlook for Malawi in the next decade has great potential to meet the social, economic and environmental needs of the country and the international community. Collaborative forest management has promising prospects for meeting both local needs and global interests of biodiversity conservation and mitigation of climate change.

Maintaining the balance between local needs and international expectations, between development and environmental conservation will be the major challenge in the next two decades. Any policy decision made on the management of these resources will have mainstream stakeholders ever growing needs.

Animal Husbandry:

In the SADC region, livestock is an important sector of the agricultural production accounting for some 20 to 40% of the agricultural GDP. Improvement of livestock productivity in the region has considerable potential for poverty alleviation, in particular for small stock (small ruminants, pigs and poultry), forming a large part of traditional livestock production. More importantly, livestock help the poor communities during shock periods such as drought. In addition, some countries in the region use livestock as a source of draught power for tillage.

Livestock

Livestock constitutes a relatively small sub-sector within Malawi agriculture. The ratio of cattle to human population is around 1 to 17, and cattle ownership in the smallholder sector is confined to fewer than 10% of farming families.

- Cattle populations have been declining, in the past decade from 750,000 in 1994 to an estimated population of about 700,000 in 2003.
- The pig population has been increasing from 250,000 in 1994 to 420,000 in 1997.
- Sheep population has been increasing slowly and is estimated at 200,000, whereas,
- The goat population is at 1.7 million.
- There is an estimated 12 million chicken and substantial numbers of other species of turkeys, ducks, pigeons and guinea fowl which are found in both agricultural sectors.

The government's overall livestock development policy is to become self-sufficient in all livestock products and to export any surplus. This is to be realized through sustainable management and use of all Farm Animal Genetic Resources (**FAnGR**).

Poultry

Poultry in Malawi is predominantly composed of the smallholder sector that constitutes 90% of the total poultry population. There is a small component (10%) owned by the commercial sector. While the rural poultry sector encompasses chickens, ducks, pigeons, turkeys, guinea fowls and geese; indigenous chickens form the largest proportion of poultry raised in Malawi. It is estimated that about 8 million indigenous chickens exist in country.

Indigenous chickens are of non-descript type but, three major categories are visibly present: (i) the naked neck, (ii) the frizzed and (iii) the dwarf. Common feather colors are waxy black, white reddish brown, gray, spotted or mixture of these.

Distribution of Livestock in Malawi

Indigenous livestock are widely distributed by class, species and use.

Dairy- Friesians and Holstein are present in all the three regions under high input production systems. Jersey and Ayrshire are present only in the southern region of Malawi, particularly in the estate or commercial sector. The Malawi Zebu is present in all the three regions under medium and low input production systems.

Beef- The Brahman are found in the north, central and southern parts of Malawi, Boran are present in the central region, while the Sussex breed is found in the mid and Lower Shire Valley. The local Malawi Zebu are present throughout the country under medium and low input production systems.

Sheep- Merino, Dorper and the local sheep are widely adapted in the country under low and medium input production systems.

Goat- Local goat is widely distributed along the lake shore areas, Lilongwe plain or Lower Shire Valley. The Saanen are found in Salima and Lilongwe, whereas the Boer are widely distributed across all the regions.

Pigs- all the Landraces, Large White and Malawi local pigs are present in all the three regions

Rabbits- widely distributed in the country

Poultry- present everywhere in the country i.e., all breeds, whereas exotic are mostly found in the urban areas.

Guinea fowls – found everywhere but with concentrations in Karonga and Mchinji

Dairy sector

Market-oriented milk production in Malawi started as a result of an increasing demand for liquid milk in the southern region of Malawi. This led to some individual farmers to import high-yielding dairy cattle from South Africa and Zimbabwe by some farmers. Between 1952 and 1954 more than 54 exotic dairy cattle were imported into the country and the commercial farms marketed milk direct to consumers. A milk plant, which was the first to pasteurise and market fresh milk in Malawi, started operating in 1961, pasteurizing 2500 litres of milk per day. In 1979 the Malawi Government and the Canadian Government through the Canadian International Development agency (CIDA) approved a dairy development project: The Malawi Canada Dairy Development project.

One consequence of this process has been dependence of the breeding strategy on Holstein Friesian bull semen from temperate regions, Canada in particular. Selection of the bulls was based

on Canadian published sire catalogues. However, there are some principal differences in the animal environment between Malawi and Canada.

Smallholder Dairy Sector

Peri-urban smallholder dairy sector supplies about 60 % of the milk that is processed at the formal processing plants in Malawi every year. Recent information, indicates that there are about 3600 smallholder farmers who use over 6000 Holstein Friesian x Malawi Zebu cows and about 1700 smallholder farmers who use an unknown number of Malawi Zebu cattle for commercial milk production in the peri-urban setting. In addition to the smallholder farmers, there are 15 private large-scale dairy farms accounting for about 2200 milking cows.

The major differentiating features between smallholder and large-scale dairy farms are the holding size, the genotype of cattle raised and the level of management applied. The predominant genotype on the large-scale dairy farms is the Holstein Friesian although some of these farms also have few Ayrshire and Jersey cattle while smallholder farmers utilize Holstein Friesian x Malawi Zebu crosses of different grades. The total milk production from both the large scale and the smallholder sub-sectors as at the year 2001 was estimated at 35000 metric tonnes per year (FAOSTAT, 2005).

Malawi consumes about 42000 metric tonnes of milk per year (FAOSTAT, 2005). With a population of about 11 million people, the estimated average milk consumption is 3.8 kg per capita. This average is very low even when compared with that for Sub-Saharan Africa, which is estimated at 30.8kg per capita (FAOSTAT, 2005).

Non-Government Organization Initiatives in the Dairy Industry

During the last decade attempts have been made in Malawi by Non-Governmental Organizations like Small Scale Livestock Promotion Programme (SSLPP) and Land 'O' Lakes (L'O'L) in dairy development to encourage the dissemination of improved technologies on credit. NGO sector stimulated development of a commercially viable smallholder dairy sector that will result in significant increases in rural incomes, provide employment opportunities, and improve overall performance of dairy business that contributes to Malawi's GNP.

Challenges in the dairy sector included low milk prices, unreliable milk collection by milk processors, transport problems for AI technicians, lack of AI equipment, and low competency of AI technicians. Further complicated by inadequate knowledge in animal husbandry by livestock

extension workers who had an average performance score of 70%. However, farmer AI technicians had a higher average score (74%) which the study considered as satisfactory for farmers.

Fishery Sector

About 20 percent (24 405 km²) of Malawi's total area (118 484 km²) is covered by water, which supporting over 800 species of fish and nearly 15 percent of the global freshwater fish biodiversity. The fisheries sector in Malawi is divided into two groups: capture fisheries and aquaculture. The capture fisheries sector is the major sector.

The annual catch from Malawi's major five major water bodies is 40 to 60 thousand tonnes. Lake Malawi is the largest and most significant water body contributed over 75 percent of the total annual catch, while Lake Chilwa contributed about 14 percent of the total catch, Lake Malombe about 1.2 percent, Lake Chiuta about 2.4 percent, Upper Shire River less than one percent, and the Lower Shire River about 4.2 percent. All these water bodies are of high local importance.

The small-scale commercial fisheries

The small-scale commercial fisheries are mechanized, capital intensive and use mainly trawling and purse seining ('ring net') and are confined in the southern part of Lake Malawi. Ornamental fishing operations are confined to two licensees that target Mbuna, the highly coloured territorial cichlids commonly found within 100 m.

Fish markets

Fish processing and trading is a major occupation among many fishing communities including women in Malawi since most of the fish sold to distant markets is in dry form for easy storage. The fishers have little bargaining power in the sales of their catch, with most marketing activities being dominated by fish traders who also to some extent function as a source of informal credit, providing necessary cash for the fisher's family needs, especially during the extended seasonal periods of limited catch and income. This situation creates a strong inter-dependence between traders and fishermen which influences market decisions over the latter.

Constraints

There are localized overfished inshore waters due to the type of fishing craft and gear used by the fishers. However, there is about 40000 mt of fish that can be caught annually from Lake Malawi. These are pelagic off-shore stocks that are being underutilized. The problem with the fishers is the acquisition of appropriate fishing gears to tap the underexploited stocks.

Development prospects/strategies

Three options to increase capture fisheries and aquaculture have been identified:

- i. Good management of capture fisheries with yields are maintained at sustainable levels
- ii. Harvest of unexploited resources from the capture fisheries, and
- iii. Aquaculture enhancement programme, spearheaded by The Chambo Restoration Strategy (CRS).

All the three above options will require strengthening the institutional framework, through
a) Policy review, b) Legislation review, c) increased private and public sector capacity, d)
Decentralization of the Department of Fisheries.

Chapter IV

Present Status and Challenges

Agriculture Marketing

Following independence, the Malawi government followed interventionist economic policies with government both regulating markets and actively intervening in markets through parastatals. The only legal body through which smallholder farmers sold and bought their farm produce and inputs was through the Agricultural Development and Marketing Cooperation (ADMARC). ADMARC guaranteed a market for the entire smallholder farm produce. Government was also the main provider of agricultural extension services and agricultural credit through the Ministry of Agriculture.

Since the early 1980s, Malawi has been pursuing market liberalisation policies. Market liberalisation entailed allowing the private sector to participate in input and out marketing of smallholder produce. While prices received by farmers have been more competitive than before, the high cost of factor inputs after removal of subsidies has made several crops and livestock enterprises less attractive relative to tobacco.

Restructuring of ADMARC, which was followed by closure of markets in remote areas created a vacuum, which private traders could not fill due to problems of liquidity, access and transportation to such places resulting in food security problems and a decline in household income. Market liberalization raises a number of issues from a poverty alleviation standpoint. It is clear that the changes that have been happened because of the economic reforms have not benefited the majority of the smallholder farmers.

The privatisation of the state agricultural marketing agency, ADMARC, has been the most controversial policy reform that has generated a lot of debate in Malawi. There are two competing arguments. Those that are in favour of the privatisation of ADMARC buy the arguments of the international financial institutions that the state marketing agency is a drain on public resources. This view holds that the private marketing system is the best alternative under whatever circumstances to state marketing, and advocates the privatisation of ADMARC (Harrigan, 2003). On the other hand, is a group of civil society organisations and researchers, though acknowledging the need to reform ADMARC, contends that the private sector is not capable of taking over the functions of ADMARC especially vital services it offers to the poor and its role in food security in a region in which famines and droughts recur.

Agriculture Insurance

The vast majority of farmers are smallholders, cultivating areas of 1 ha or less. The main food crop is maize, while tobacco and groundnut are the two principal cash crops. Over 90% of crop production is rainfed, taking place during a single rainy season lasting from December to April. Rainfall during this period tends to be highly erratic and drought is a recurrent problem, often causing widespread crop failure. In addition, the risk of drought is a major factor keeping productivity low, since even in good years farmers are wary of using inputs such as improved seeds and fertilizers for fear of losing their investment.

Climate has become an urgent issue on the development agenda of countries particularly developing countries as well as least developed countries whose economies are heavily reliant on rainfed agriculture including the livelihoods of the majority of populations in these countries. Malawi is no exception and a variable, unpredictable climate presents a risk that hinders development.

The World Bank, in close collaboration with Malawi's National Association of Small Farmers (NASFAM), developed an index-based crop insurance contract that is more efficient and cost-effective than traditional crop insurance and can easily be distributed to individual smallholder farmers to increase their access to finance and to protect farmers and loan providers from weather risk. The program was piloted in 2005.

Objectives

- Help farmers manage weather (drought) risk;
- Facilitate farmers' access to credit by reducing the risk of smallholder loan default;
- Allow banks to expand their lending to the agriculture sector without increasing default risk.

For Malawi, insurance should be closely linked to more formal and better coordinated supply chains and aim to scale up index insurance with such chains. Expansion into new areas and crops should occur only when these meet this criterion. However, the low density of automated rainfall stations in Malawi remains a limiting factor to up-scaling.

Agriculture Mechanisation

Mechanization is an approach which makes possible the development of Agricultural sector. Therefore planning for mechanization development was the most important factor in planning the agricultural development and its objective related to the documents containing the main objectives of the country at large.

The smallholder sub-sector is important to the country's economy since it supplies about 85% of the country's food requirements and accounts for about 80% of the agricultural output. However, the sub-sector operates almost at subsistence level due to low farm sizes, low levels of technology use and lack of adequate draft power. Smallholder production is derived almost entirely from family labour. Although labour is not considered a constraint for most farmers, labour shortages do occur during land preparation and harvesting periods, especially on larger holdings.

Farm power was limiting smallholder production through the failure to meet crop labour requirements during critical periods (planting, fertilising and weeding). He also found that use of draft animals and animal-drawn implements reduced labour requirements, resulting in increased labour productivity. Coupled with improved inputs, this led to improved land productivity through increased yields.

African agriculture increasingly relies on human muscle power. This problem is compounded by labor shortages arising from an ageing population, rural-urban migration, and HIV/ AIDS. Even in areas where rural population is increasing faster than the cultivated area, labor may be in short supply during critical field operations due to competition with more rewarding sectors, such as construction and mining. One consequence of low farm mechanization is high labor drudgery, which disproportionately affects women, as they play a predominant role in weeding, threshing, shelling, and transport by head-loading, and which makes farming unattractive to the youth. Sustainable intensification in sub-Saharan Africa appears unlikely if the issue of inadequate and declining farm power is not addressed. Power supply could be increased through appropriate and equitable mechanization, while power demand could be reduced through power saving technologies such as CA.

Irrigation

Though 20 per cent of the country is covered by water, despite such 'abundance', the country's water resources are increasingly strained by competing demands from various economic sectors, such as agriculture, tourism, mining, industrial and domestic consumption, energy and hydropower, among many others, within the context of growing population and resultant increase in water demand. Presently, Malawi suffers from both economic and physical water scarcity. The total irrigable land available reflects limited investment in infrastructural development in support of irrigation based farming.

The estimated area currently equipped with irrigation estimated at 72,000 hectares, of which 48,000 hectares is under estates from which the major crops such as sugar cane, tea, and coffee are produced. The remaining 24,000 hectares are under different forms of smallholder irrigation. In addition to these figures, an estimated 62,000 hectares is classified as being under informal water management mainly conducted in wetlands and informal self-help schemes.

Irrigation Rural Livelihoods and Development Project (IRLADP) The Government of Malawi launched an irrigation programme, jointly supported by IFAD and the World Bank, in 2006 with the objective to raise agricultural productivity and net incomes of poor rural households by providing an integrated package of support covering irrigation, agricultural/ irrigation advisory services, marketing and post-harvest assets and services.

Institutional framework for irrigation management

The newly elected government has, since 2014, merged the ministries of Agriculture and Food Security and that of Water and Irrigation Development to form a new ministry, the Ministry of Agriculture, Irrigation and Water Development.

IRLADP has embarked on rehabilitation of old irrigation schemes established in the 60s and 70s, and establishing new small and micro-schemes. Most importantly, the project has focused on strengthening capacity of the irrigation sector institutional framework, including staffing at national and district level, developing appropriate by-laws and facilitating irrigation management transfers as well as developing structures for supporting Water User Associations. Malawi is undergoing a water management reform process in which Catchment Management Authorities (CMAs) are to be established.

The agricultural sector consumes 49% of the country's water resources and with lack of knowledge on proper irrigation methods, and poor capacity to recycle water by small industries, water use capacity is low. Challenges in achieving the expectations relate to the fact that key aspects of water resource governance such as water demand management, are hardly practiced.

Agriculture/ Food Processing

Groundnut and Soybean Value Chains

Groundnut and soybean grow in similar agro-ecological zones, so farmers can and do substitute them when making their planting choices. These are widely grown crops, particularly across Central Region. Production of soybean and groundnut is more limited in the lower, hotter

and dryer districts and low lying areas. In these districts, more drought tolerant crops like cotton and pigeon peas are more common.

Top Agricultural Opportunities in Malawi

Malawi has vast untapped agribusiness potential, since, the country has good transport connections for exports to regional and international markets. It also has preferential access to major markets represented by COMESA, SADC, LOME IV and AGOA.

1. Cotton production

Investment opportunities exist in the commercial cultivation of cotton through contract farming, village adoption, cooperatives and associations. There are also larger-scale opportunities, such as the call for an investor to establish a second spinning, weaving and knitting plant in the country.

2. Tea production and processing

Tea is the second most important export crop for Malawi and it contributes around 8% of total export earnings through export to European, Asian and American markets. Since tea is a major foreign exchange earner, additional investments are necessary through joint ventures with Malawian companies in the processing of tea and other by products and also in the actual farming of the crop. New opportunities also exist in the processing of green tea for East Asian markets.

3. Macadamia nuts processing

Macadamia is among the most important cash crops in Malawi with variety of uses, ranging from usage in confectionery products, eaten raw or roasted as dessert nuts. They are also used for household oil extraction and cosmetic manufacturing. Macadamia products are exported to both Asian and European markets. So far, macadamia bodies have been established and two processing plants, however, due to increasing demand for the product, more foreign investment is being sought to boost the production and processing of the nuts.

4. Arabica coffee production and processing

Arabica coffee is the fourth most important export crop in Malawi. Exports are made to European markets, Asia markets and American markets. Opportunities for investment exist in form of joint ventures in production and processing of coffee into marketable products.

5. Soya bean processing

Malawi produces more than 35,000 metric tons of soya beans per year. Most of the soya bean is exported raw and little is processed for food domestically. Malawi's soil is very conducive

to soya bean cultivation and farm gate prices are internationally competitive. As such, investment opportunities exist in the processing of soya beans into soya milk, soya oil and other secondary products.

6. Cut flower production

Investment opportunity exists in the production of cut flowers exclusively for the export market in Europe. There are already some firms that are successfully exporting to Europe and additional investment in this sector will create economies of scale and hence make Malawi's cut flower industry more competitive on the international market. Malawi has a favourable climate and weather and also sufficient labour is readily available for direct export by air to Europe.

7. Fruit processing and canning plant

The country has a favourable climate for the production of a wide range of fruits that include pineapples, tangerines and mangoes. The local market for these products is good and there are export opportunities to South Africa and other regional markets. An investment opportunity exists to set up a fruit juice processing plant in the southern region of Malawi.

8. Sesame processing

Sesame is used in Malawi both for consumption and cash medium in some rural areas. It is used in confectionery products, for seasoning side dishes, and in soap making and cooking (incl sesame oil). Opportunities exist in production and processing of sesame oil into marketable products.

The Agriculture Sector Wide Approach (ASWAp)

The Government of Malawi (GoM) and its Development Partners agreed to formulate the Agriculture Sector Wide Approach (ASWAp) as a means for achieving agricultural growth and poverty reduction goals of the Malawi Growth and Development Strategy (MGDS). The MGDS has targeted agriculture as the driver of economic growth and recognizes that food security is a pre-requisite for economic growth and wealth creation.

The ASWAp is unique, single comprehensive programme and budget framework; has a formalized process for better donor coordination, harmonization of investment and alignment of funding arrangements between GoM and donors; promotes increased use of local procedures for programme design, implementation, financial management, planning and monitoring. The development of the ASWAp was highly participatory and consultative involving the Central Government Ministries and Local Councils, Civil Society Organizations, Non-Governmental

Organizations, Development Partners, Cooperating Partners, Private Sector, Academia and the general public.

Priority Focus Areas of ASWAp

- Food Security and Risk Management Component focuses on increasing maize productivity, reducing post-harvest losses, diversifying food production, managing risks associated with food reserves at national level.
- Malnutrition will be reduced by agricultural diversification to legumes, vegetables, fruits, Goat meat and milk, pigs, rabbits, chicken and guinea fowl meat and eggs, and fish.
- Commercial Agriculture, Agro-Processing and Market Development Component will be involving smallholder farmers. More public private partnerships involving producers, buyers, input dealers, service providers, and policy makers in the value chain.
- Sustainable Agriculture Land and Water Management focuses on sustainable land and water utilization.

Key Support Services of ASWAp

1. Technology Generation and Dissemination Component will aim at improving research services with a focus on result- and market-oriented research on priority technology needs in the sector.
2. The component will also deal with technical and regulatory services needs of the stakeholders complemented with efficient farmer-led extension and training services.
3. Institutional Strengthening and Capacity Building Component will focus on strengthening public institutions, building capacity in public management systems and improving resource allocation for effective implementation of agricultural programs.

Chapter V

Status of Agriculture Extension and Research system

DESCRIPTION OF CURRENT EXTENSION AND ADVISORY SERVICE PROVIDERS, THEIR ORGANIZATION AND CAPACITY

Governmental Extension System

The Ministry of Agriculture, Irrigation and Water Development (MAIWD) Department of Agricultural Extension (DAES) is by far the largest extension provider in the country. DAES technical branch heads reported a total of 2,415 field and office staff members, compared with a combined 968 technical staff members reported by Masangano and Mthinda (2011) for the 36 extension and advisory service providers included in their study. Furthermore, DAES is the only nationwide extension provider and the only organization working across all agricultural value chains and other services areas (e.g., health and nutrition).

Structurally, the governmental extension system is organized around a four-tier administrative hierarchy:

- A. National,
- B. Agricultural Development Divisions (ADDs- eight),
- C. Districts (28) and
- D. Extension Planning Areas (EPAs-187).

At the national level, the DAES is led by a director, who is assisted by the heads of the five technical branches. Three of the branches are led by deputy directors – Extension Methodology and Training Services (EMS), Agricultural Gender Roles Extension Support Services (AGRESS), and Food and Nutrition (FN). The Agricultural Communications and Agribusiness branches are led by a chief agricultural extension officer and an assistant chief agricultural extension officer respectively.

At the second hierarchical level, the **ADD offices** are led by program managers, chief and assistant chief agricultural extension officers, and principal subject matter specialists (SMS) representing each of the DAES technical branches, in addition to SMS from other MAIWD departments (Animal Health, Crop Development, Fisheries, Irrigation and Water Development, Land Resource Conservation and Management, Planning).

DAES activities at the district level are led by district agricultural development officers (DADO), their assistants, and SMS for each of the DAES branches and other MAIWD departments.

At the extension planning area (EPA) level, agricultural extension development coordinators (AEDCs) supervise and coordinate the activities of the agricultural extension development officers (AEDOs), the frontline extension staff members who operate at sectional levels comprising five to 15 villages each.

NGOs and Project Extension Efforts

More than 10 international NGOs and a larger number of domestic NGOs are providing extension and advisory services (EAS) to smallholder farmers in Malawi.

CISANET has established five programmatic areas: climate-smart agriculture, markets and international trade (including fair trade), livestock and dairy development, governmental budget accountability, and nutrition and social protection

Organization: NGOs often have sub-offices at the district level and may employ a limited number of frontline extension workers (FLWs). As with the DAES AEDOs, NGO FLWs commonly work with “lead farmers” and groups of farmers that are formed around the lead farmers, usually with the aim of promoting adoption of one or more improved technologies or farming methods.

Private Sector

For-profit Companies

Malawi has a wide range of for-profit companies operating in the agriculture sector. Some of these companies provide extension and/or advisory services to farmers, although the services provided vary widely in breadth, depth and quality. The key for-profit companies that provide EAS include tobacco production and purchasing companies (accounted for 70% of Malawi’s foreign currency income); cotton companies (organized around ginning facilities); milk, tea, coffee, sugar and grain buyers/processors; input seed and fertilizer supply companies; and large and small agricultural input retailers.

Farmers’ Organizations

The main umbrella body representing the interests of farmer organizations in Malawi is the Farmers Union of Malawi (**FUM**), established in 2003 through the assistance of DAES in an effort to consolidate and establish a representative voice for independent smallholder farmer associations

and cooperatives. The union currently has 93 member organizations representing a reported 350,000 smallholder farmers (the largest is TOBACCO with 87,000 members; the average union member size is 1,000 to 4,000). The FUM is recognized by the GOM as the official representative of smallholder farmers' organizations in the country.

Largest farmer association in Malawi is the National Smallholder Farmers' Association of Malawi (**NASFAM**), works nationwide to assist development of diversified crop marketing opportunities for its members. In many ways it operates as a *pull*-based private business, identifying profitable commodity markets, bulking members' production and commercializing various products under its own label.

Organization: As primarily an umbrella advocacy organization, the **FUM** serves to convene its members to address national policy issues. It also provides some services to member organizations to strengthen their internal management and advocacy capacities, and develop increased market access. To date, FUM has been largely donor-funded implementing eight donor-funded projects, totalling around \$8 million US in annual expenditures.

Structurally, the **NASFAM** is actually three subsidiary organizations:

- i. Corporate entity responsible for the overall governance of the NASFAM system,
- ii. Commercial entity managing all commercial activities, and
- iii. Development entity, a registered trust and NGO undertaking social and community development activities (NASFAM, n.d.).

Some of the challenges that Malawi has experienced in the implementation of pluralistic and demand-driven services include:

- Shortage of trained extension staff
- Shortage of resources to support provision of quality extension services
- Farmers inability to demand services
- Poor coordination of services

Table: A SWOT Analysis of the Pluralistic Extension System

Strengths	Weaknesses
<ul style="list-style-type: none"> • Many extension service players targeting different farmers • Fully fledged public extension structure available in all districts • A network of farmer volunteers to support other farmers • Partnership of extension organisations • Public extension system available across the country • Better coverage of smallholder farmers 	<ul style="list-style-type: none"> • Uncoordinated extension services • Weak farmers' organisations- resulting in extension service not demand-driven • Weak capacity of public extension service- high farmer-extension worker ratio, high vacancy rate, limited resources for staff (transport, stationary, poor working conditions in general) • Weak farmers-research-extension linkages • Marketing arrangements farmers' produce not established
Opportunities	Threats
<ul style="list-style-type: none"> • Public/private service providers partnerships – since there are many extension service providers available • Favourable policies - pluralistic and demand driven extension, Agricultural Sector Wide Approach (ASWAp), MGDS, etc • Willingness by donors to support agricultural sector • Technological breakthroughs • Farmers responsive to appropriate technology • Farmer empowerment 	<ul style="list-style-type: none"> • Increase in inputs and output prices • Unavailability of markets • Unfavourable weather such as droughts and floods • Illness and death of key farmers and staff • Uncommitted farmers and staff • Change in policies

Agriculture Research

Agricultural research in Malawi began in the early 1900s, primarily undertaken by the Department of Agriculture- under the colonial government prior to independence in 1964, and under the Government of Malawi thereafter- as well as commodity organizations, such as the

Empire Cotton Growing Organization. The early days of research focused on varietal testing of export commodities like coffee, cotton, and tobacco, among others.

The National Agricultural Research System

The concept of a National Agricultural Research and Development System emerged in order to adapt the prevailing paradigms and institutional set ups in agricultural research, to the emerging needs for a more efficient dissemination and adoption of research findings.

A NARS has defined as an organized system mobilizing the contribution of stakeholders in agriculture. Typically, a NARS system would consist of:

- Research institutions (public, private and professional)
- Universities and professional training institutions
- Extension organizations
- Private companies and their organizations
- Non-Governmental Organization (NGO) and Civil Society Organization (CSO)

The basic principles of NARS are:

- A NARS operates for the development and use of research by the stakeholders.
- A NARS is governed by participatory bodies.
- A NARS is funded by governments and stakeholders.
- A NARS is planning, evaluating the outputs of research and development programs.
- A NARS is supervising the development of international cooperation.
- A NARS should consider elements of Technology use, adoption, transfer and its impacts.

Institutional Framework of the NARS

Relevant ministries and departments for Agricultural Research and training:

- Ministry of Agriculture and Food Security
- Ministry of Education, Science and Technology
- Ministry of Energy and Mining
- Ministry of Lands and Natural Resources
- Ministry of Tourism, Wildlife and Culture
- Ministry of Economic Planning and Development
- Ministry of Irrigation and Water Development
- Ministry of Trade and Private Sector Development.

Crop Research Policy

Research policy strongly emphasizes food self-sufficiency rather than food security even though the latter is consistent with liberalized economic system. The low priority accorded to mechanization and processing technologies in research is a clear evidence of the flawed sustainable development strategy. Therefore, there is a need to review the crop research policy to cater for value addition to the crops Malawi produces in order to increase the people's income.

Livestock Research Policy

The National Livestock Development Master Plan (NLDMP) recognizes the poor problem analysis DARS, DAHI, DAES, NGOs at a farmer level and that past research has not paid attention to the needs of livestock owners. It gives high priorities to improving disease control and improved husbandry at the farm level and increasing the feed supply to increase animal production.

Fisheries Research Policy

The role and function of the research unit of the Department of Fisheries is to undertake relevant and problem-solving management oriented research programmes.

Fisheries research focuses on: development of appropriate fishing equipment and harvesting methods for deep water fishing; monitoring both deep and shallow water fishes; development of community-based fish management practices; environmental monitoring; aquatic ecology on vulnerable habitats; processing; storage; and Inventory of fish species.

Forestry Research Policy

Forestry resources are declining at a rapid rate due to a number of factors including: 1. increased demand for firewood for home consumption and agricultural uses; 2. timber for home and industrial uses; 3. lack of improved technology to enhance efficiency of utilization; and 4. land for agriculture use.

The overall objective of forestry research is to optimize tree productivity on farm, woodlots, plantations and woodlands in order to enhance the contribution of trees and forests to the economy of Malawi. Specifically, forestry research aims at: 1. providing technical and social forestry solutions to problems communities encounter in daily lives; 2. establishing methods and generating knowledge for advancing forestry science; 3. providing leadership in forestry sector development, and 4. contributing towards a scientific culture.

Chapter VI

Public and Private Institutions and their Relevance in Agriculture Development Registered Institutions / Organizations Delivering High Level Training and In-service Training in Agriculture

Agriculture and Natural Resources

Malawi has a number of institutions which deliver high level and in-service training ranging from certificate to PhD. However, it should be mentioned these institutions are inadequately funded as a result human capacity is still a problem both in research and extension.

Table: Institutions / organizations delivering high level training and in-service training in agriculture and natural resources in Malawi

SN	Name of institution	Type of institution	Highest level offered
1	University of Malawi	Public	Ph D
2	Mzuzu University	Public	BSc
3	Natural Resources College	Semi - Public	Diploma
4	Malawi College of Forestry and Wildlife	Public	Diploma
5	Agriculture and Research Extension Trust (ARET)	Semi - Public	Certificate
6	Mikolongwe College of Veterinary	Semi - Public	Diploma
7	Mpwepwe College of Fisheries	Public	Diploma

Networking for Agricultural Research, Training and Development

- 1. 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 and farm mechanization.
- 2. 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.
- 3. The Department of Fisheries (DoF)** is focused at maximizing the sustainable economic yield of stocks in natural and man-made waters. The strategies emphasize research to identify underutilized fish resources especially in the offshore waters of Lake Malawi, as well as the

promotion of aquaculture development particularly in the Central and Northern regions of Malawi.

4. **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. In its mandate it ensures 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.
5. **The Department of Irrigation Services (DIS)**- key role in disseminating irrigation technologies to the smallholder farmers, to develop land and water resources for irrigation and promoting a no. of irrigation technologies. Actively involved in developing farmer associations/ cooperatives for sustainable irrigation management by the communities.
6. **University of Malawi**- Three institutions under the general administration of the University of Malawi conduct research directly connected to crops, livestock and rural development.
 - a. **Bunda College of Agriculture**- The college has the mandate of doing some research work on the common bean i.e. diseases and insect control, intercropping patterns and culinary aspects. Apart from research on common beans, scientists at Bunda College collaborate with DARS on general food legumes; vegetables, livestock/pastures research and the nutritional evaluation of livestock feeds.
 - b. **Chancellor College and the Polytechnic**- The departments of Biology and Chemistry at Chancellor College have been working together with DARS scientists on cassava mealy bug, soil pests and cassava detoxification projects. The center for Social Research has been utilized in carrying out social research related to agricultural and rural development. The Polytechnic is involved in development of farm equipment.
7. **The Agriculture Research and Extension Trust (ARET)**- Agriculture Research and Extension Trust (ARET) continue to conduct research on all types of tobacco and to provide extension services to the estate sector. It is envisaged that ARET will co-operate with DARS in its efforts to promote crop diversification on the estates.
8. **Tea Research Foundation of Central Africa (TRF)**- The Tea Research Foundation of Central Africa (TRF) is one of the oldest research institutions in Malawi as well as southern Africa and Tanzania conducts all research on tea for Malawi. Though privately owned and

funded, the results of research work on tea are made available to smallholder farmers growing tea.

- 9. Department of Animal Health and Livestock Development-** The department provides veterinary services to the smallholder farmer, carries out research on animal diseases and also engaged in livestock production and marketing. Since DARS also carries research on livestock, co-ordination with this department is necessary for better planning of activities pertaining to livestock to avoid duplication in livestock research.
- 10. Forestry Research Institute of Malawi (FRIM)-** The Forestry Research Institute of Malawi (FRIM) is under the Ministry of Lands and Natural Resources concentrates its research on forestry. DARTS' Agroforestry Commodity Team Leader collaborates with FRIM on various activities.
- 11. Sugar Research-** Research on sugar is conducted by Sugar Corporation of Malawi (SUCOMA) and Dwangwa Sugar Corporation (DWASCO) under the Illovo group of companies. A quarantine facility at Bvumbwe Research Station has been funded by SUCOMA.
- 12. The Food and Nutrition Unit-** The food and nutrition unit was established within the Ministry of Agriculture and Food Security collaborate with DARS unit in areas of processing, utilization and storage of food, fish and livestock products.
- 13. The Planning Division-** This division falls under the umbrella of the Ministry of Economic Planning and Development, provides the necessary data to planning division in the Ministry of Agriculture and Food Security. The DARS interacts with this division in tapping on these data for planning purposes. In addition, DARS utilizes this division in the formulation of projects for funding.
- 14. Parastatal Organizations-** Parastatals play an important role in the development of the nation. There are about 35 commercial, quasi-commercial and subverted parastatals involved in crops and livestock. DARS interacts with these organizations for taking up research and or extension programmes as per necessary.

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 Research Systems in most of their activities although some of the technologies are imported. These companies are mainly

working on maize varieties although some have extended to other crops. Seed Company (Malawi) Limited, is one private company undertaking research in seeds and marketing.

Roles and Research Needs of Private Sector Organizations

There are many private sector organisations in Malawi. But, unfortunately they play a very minor role in research needs identification and yet they are the beneficiaries.

It is therefore, necessary that:

- There should be an encouragement to NGOs to participate in research and training. E.g. NASFAM training farmers and not its own staff.
- These organizations are in direct contact with the farmers; hence know the needs of people.
- The objectives of the private sector organization should be aligned to the research national needs.

International Research Institutions

Most of the CGIAR centers currently operate in Malawi; these include ICRISAT, CIAT, ICRAF [World Agroforestry Centre], IITA)/ SARRNET, CYMMIT and WFC. Each of these CGIAR institutions plays a key role in promoting technology development by closely collaborating with the national agricultural research system. Their main mandates are described below:

1. ICRISAT

The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) focus on the semi-arid tropics in Africa with overall aim is to alleviate hunger and poverty through agricultural development, focusing research on crops, farming systems and income opportunities for poor farmers in semi-dry areas.

2. ICRAF (World Agroforestry Centre)

In Malawi, it has pursued the mandate of agroforestry technologies to promote soil fertility improvement, livestock fodder supply, wood lot establishment and domestication of indigenous fruits.

3. IITA/SARRNET

International Institute of Tropical Agriculture (IITA)- established in 1967 with specific mandate to improve food production in the humid tropics. Research has focused on food crops such as: cassava, plantain and banana, yam, maize, soybean, and cowpea.

SARRNET - the Southern African Root Crops Research Network - is a network/project launched in 1993, with IITA as the institution responsible for coordination of the network and executing the project. SARRNET activities focus on cassava and sweet potato as principal crops, with CIP.

4. CIAT

The International Centre for Tropical Agriculture (CIAT) to conduct research on bean to help rural communities in the region build sustainable livelihoods through fostering strong, mutually beneficial relationships among national research institutions, non-government organisations, the private sector and, most importantly, farmers themselves.

National Smallholder Farmers' Association of Malawi (NASFAM)

JOINING SMALLHOLDERS TOGETHER TO INCREASE ECONOMIC OPPORTUNITIES

Liberalization of agricultural production and marketing, aimed at to raising incomes amongst Malawi's resource poor smallholder farmers. In support of this liberalization, Smallholder Agribusiness Development Project (SADP), launched in 1995. SADP established seven agribusiness development centers (ADCs) located in key smallholder growing areas began to help farmers form small clubs at the grassroots, whose members then created informal group action committees (GACs) to address a range of constraints the farmers were facing in marketing their crops (transportation, quality, storage, marketing linkages, financial services and government policies). District-level GACs subsequently formed self-financing shareholder-owned and -controlled agribusiness associations, which in turn established the **National Smallholder Farmers' Association of Malawi (NASFAM)**.

The National Smallholder Farmers' Association of Malawi (NASFAM) is the largest smallholder owned membership organisation in Malawi. NASFAM today represents over 108,000 farm families, with women constituting 31 percent of association committee members, and 38 percent of the total membership.

NASFAM provides a variety of member services financed through an ongoing government levy, user fees, membership dues and external donor support. These services include-

1. Training in business management, marketing, quality control, literacy and basic education and information services to 200,000 farm families.
2. The policy and advocacy unit addresses policies that impact smallholder producers and agribusinesses.

3. NASFAM Strengthening Project have helped Malawi's smallholder farmers take control of their lives, enabled them to send more children to school, buy medical services, improve nutrition and housing, and reinvest their profits in rural microenterprise activities.

NASFAM is a farmer-member controlled system. This control starts at Association level. The smallest operational unit of NASFAM is the Club, made up of 10-15 individual farmers. Clubs combine to form Action Groups that are the key points in the extension network for dissemination of information to members, and for the bulking of member crops. Action Groups combine to form NASFAM's Associations. Currently, NASFAM has 43 associations.

NASFAM Associations are legally registered entities, member-owned and managed by annually elected farmer Boards. The Associations are grouped by geographical location under 14 Association Management Centres (AMCs).

Chapter VII

Present Capacity Building Programmes and Potential Areas

The following are stated as challenges facing farmers:

- Tenure insecurity
- Inadequate, vandalized & aged equipment and machinery
- Inadequate Production and social infrastructure
- Irrigation infrastructure vandalized and costly
- Limited skills and knowledge of new areas
- Limited access to inputs-labour, seed, chemicals, fertilizer, stock feeds.
- Limited/ No access to commercial loans
- No information on alternative crop markets

Extension Challenges

There are a number of challenges facing extension that require a response from the public sector and other stakeholders. A clear and positive response to these challenges will help shape the future of agricultural extension in Malawi for the benefit of all farmers and the attainment of the broad policy objectives of government. The following are among the key challenges facing extension:

- Democratization
- Market liberalisation
- Decentralization
- HIV/AIDS crisis
- Shrinking public sector resources;
- Public sector reform;
- Co-ordination;
- Difficulty to assess extension impact;
- High malnutrition levels among the farming communities;
- Low literacy level of farmers; and,
- Shrinking production resources.

Pre-service training of extension workers is a key function of the central level public sector. All individuals interested to take up professional extension work in both the private and the public sector should undergo requisite training recognized by the central level public sector. This

ensures that there are set standards or minimum qualifications for extension service agents, whether from the public or private sectors. The public sector also ensures **in-service or upgrading training** for all the extension service agents to meet their professional needs in accordance with new developments and changing trends in the agricultural sector. In the process of providing quality training the central level public sector has a role to co-ordinate staff training at national, regional and international level.

Farmer- to- Farmer Approach

To improve smallholder farmers' access to information, many extension services use farmers to help disseminate information that their fellow farmers can use to help increase agricultural productivity. This extension approach is referred to as "farmer-to-farmer," and the farmer extension agents are variously referred to as lead farmers, model farmers or extension multipliers, among others. The involvement of farmers in implementing extension services helps overcome the problem of inadequate staffing levels in public extension services. Lead farmers can reach larger numbers of farmers at lower cost, and their use is believed to improve the sustainability of service provisioning. The farmer-to-farmer extension approach is widely used in agricultural services in many developing countries, but few studies have been carried out to assess how organizations use the approach in varying contexts and how effective it is. This study assesses the use of the farmer-to-farmer extension approach by organizations in Malawi.

Current use of lead farmer approach

In their use of the farmer-to-farmer approach, most organizations (92 percent) reported that the main role of the field staff is to build the capacity of lead farmers through training and provision of back-up support (Table 14). The other roles of field staff members include follow-up support of the lead farmers (60 percent). Examples include monitoring their performance or obtaining feedback about the farmers' needs; working with lead farmers to disseminate information to farmers (56 percent); conducting trials of technologies jointly with lead farmers (28 percent); and designing and packaging technical messages (28 percent).

The new national extension policy was finalized in 2000, and launched under the heading Agricultural Extension in the New Millennium: Towards Pluralistic and Demand-driven Services in Malawi (MoAI 2000). It aimed to address the complex challenges faced by the agricultural sector in Malawi, formulating a number of basic guiding principles, such as:

- Shifting from supply-driven to demand-driven extension service provision

- “Those who benefit pay”, implying that the government will not (be able to) pay for all required extension services, or to pay for services benefiting commercial farmers or NGO programmes
- Promotion of pluralism, which implies that the role of DAES as an implementing agency will be diminished, while its role will shift towards facilitating and coordinating the work of other players in this field, such as private sector, farmers organisations, and NGOs
- Decentralisation, which means that the 27 Districts will be responsible for organising and coordinating extension services at the local level

Chapter VIII

Training priorities of the country in Agriculture and allied sectors

1. Involvement of Private sector, Farmers Organizations and NGOs in extension

a. Private sector-

- i. Input** (fertilizer, seed, pesticides and livestock feed and others) companies, value chain companies (marketing, processing, export etc)
- ii.** Companies provide extension and/or advisory services to farmers,
- iii.** The companies- tobacco, cotton, milk, tea, coffee, sugar and grain buyers/processors; input supply companies such as the seed and fertilizer supply companies; and large and small agricultural input retailers.

b. Farmers Organizations (FOs)

- i.** Farmers Union of Malawi (FUM), National Smallholder Farmers' Association of Malawi (NASFAM),
- ii.** Works nationwide to assist development of diversified crop marketing opportunities for its members. In many ways it operates as a *pull*-based private business, identifying profitable commodity markets, bulking members' production and commercializing various products under its own label.

c. Non-Government Organizations (NGOs)

- i.** More than 10 international NGOs and a larger number of domestic NGOs are providing extension and advisory services (EAS) to smallholder farmers in Malawi

- d.** Approximate nos to be trained- Private sector companies- -----; FOs- ----; and NGOs- ----

2. Nutrition and Income security through Horticulture development

- a.** The horticulture sector in general has the potential to complement the country's traditional cash crops of tobacco, tea and sugar in terms of contribution to national economy.

- b. Cultivation of horticultural crops is a potential alternative source of income to tobacco which is a major income source for most farmers and an important export earner for the country.
- c. In addition to national contribution, horticultural commodities such as fruits and vegetables have the potential to contribute to household nutrition, food security and income.
- d. Disorganised production and marketing are major features of the sector. Essential support services needed to develop the sector are inadequate.
- e. A concerted effort from public and private stakeholders can create a conducive environment for vegetable production.
- f. Limited government and private sector support on production, marketing and processing of horticultural commodities
- g. Technical/technological challenges-
 - Lack/inadequate agronomic and/or technological knowledge on production;
 - Low production levels and poor quality products due to poor germplasm; Lack or inadequate supply of tree seedlings for increased production;
 - Limited expertise on post-harvest handling, and marketing of horticultural products.
- h. Marketing challenges-
 - Lack of organized markets, poor marketing infrastructure and market information system in addition to imperfect markets;
 - Poor infrastructure- Road condition and road net-work;
 - Low prices offered on horticultural commodities due to low quality and inefficient markets.
- i. Institutional constraints-
 - Inadequately trained and specialized staff in research and extension with respect to horticulture marketing and processing;
 - Lack of entrepreneurship;
 - Ineffective and inefficiently managed farmer organizations due to poor leadership and management skills of executive members;

- Limited and in some cases lack of access to financial credit by entrepreneurs in the horticulture sector and high interest rates whenever the financial credit is available.

3. Coordination between various organizations and agencies-

- Different organisations in public, private, NGOs and Farmers organisations from national, district and international are involved in technology development and dissemination process
- Development of institutional mechanism at National and District is very much necessary to coordinate and avoid duplication of efforts and resources.
- Extension is expected to establish and bring together farmer associations, smallholder farmers, special interest groups, NGOs, traditional leaders and agribusinesses, credit providers, nutrition and health, education, environment, gender and allied agencies for decentralized decision-making
- No. of persons to be trained-

4. Promoting gender equality and equity in agricultural extension service

- Female-headed households represent about 23% of total households
- Male headed households have more access to technology- improved and high quality inputs, extension and other essential services
- However, their counterpart women headed households either weak or denied to access to technology, extension and services, resulted into low income and living standards
- Pushing for expansion of extension services, reform of land ownership and inheritance rights, and more female empowerment programs necessary to address these gender-based productivity gap
- Target group for capacity building- national, divisional and district heads and extension officials from public sector (Agriculture, Livestock, fisheries), NGOs, Farmers organisations etc.
- Approximate nos- -----

5. Use of Information and Communication Technologies (ICTs) in Extension

- a. Such as community radio, can expand extension's reach deep into the rural hinterland as the African Farm Radio Initiative (AFRRI) project demonstrated, but the use of these technologies in Malawi is in its infancy.
- b. Communication technology for mobilizing and organizing farmers for participation development programmes.

6. Develop and use of Irrigation facilities

- a. 20 per cent of the country is covered by water, despite such 'abundance', only about 10% area is irrigated.
- b. Country's water resources are increasingly strained by competing demands from various economic sectors, such as agriculture, tourism, mining, industrial and domestic consumption, energy and hydropower
- c. Irrigation development in Malawi has suffered from factors common in other states in the region, which include the failure to develop and link irrigation schemes to markets and value add on their output, leading to over-supply of grain in the market and deflated prices
- d. Lack of knowledge on proper irrigation methods, 'planning of a comprehensive and sustainable water resource management and implementing it in an integrated manner with other sectors is the key to the success of the sector'.

7. Mushroom production- Opportunities and challenges

- a. Mushroom production farmers have witnessed an increase in demand as it has added to dietary requirements.
- b. Despite having the largest commercial demand, we found that button mushrooms are not being commercially cultivated in Malawi. The main reason given was that these mushrooms require more advanced cultivation techniques which most growers in Malawi cannot afford.

8. Agribusiness opportunities for income security

- a. Value chain development- at present only 2 value chains- Groundnut and Soybean to some extent.

- b. Malawi has vast untapped agribusiness potential, since has good transport connections for exports to regional and international markets. Following are potential areas for agri-business development
 - i. Cotton production and processing
 - ii. Tea production and processing
 - iii. Macadamia nut processing
 - iv. Arabica coffee production and processing
 - v. Soybean processing
 - vi. Cut flower production and export
 - vii. Fruit processing and canning unit
 - viii. Sesame processing
- c. Value chain development through Public- Private Partnership (PPP) for important commodities, right from production to marketing

9. Agriculture Mechanization

- a. African agriculture increasingly relies on human muscle power. This problem is compounded by labor shortages arising from an ageing population, rural-urban migration, unavailability at critical stages/ operations and HIV/ AIDS.
- b. Training is necessary and paramount, not only for farming skills but also for management of farm machinery and other technologies, finance, forward planning, marketing, etc.
- c. Credible development of a viable agricultural machinery industry, including manufacture of a range of agricultural implements and, eventually, diesel engines, pumps and tractors.
- d. Develop regional centres of excellence in agricultural mechanization.
- e. Farmers' entrepreneurial skills and adaptive management capacity to changing markets, technologies and policies including opportunities to use agricultural machinery for off-farm and non-agricultural activities such as transportation and infrastructure maintenance.
- f. Provide in-service training for extension officers, artisans and other entrepreneurs to improve their understanding of the different power and mechanization options available to farmers and to expose them to new technologies and opportunities

10. Fish production

- a. The fisheries sector has a key role to play in poverty reduction through the provision of rural employment and, through its contribution to household food security.
- b. Three options for increasing fish through capture fisheries and aquaculture have been identified:
 - i. Good management of capture fisheries to ensure that yields are maintained at sustainable levels,
 - ii. Harvest of unexploited resources from the capture fisheries, and
 - iii. Aquaculture enhancement programme, which is being spearheaded by The Chambo Restoration Strategy (CRS).
- c. Promote aquaculture development as a means of raising rural farm incomes and increasing fish supply in rural areas to sustain food security
- d. Promote aquaculture development through public private partnerships for investment in the development capture fisheries and aquaculture
- e. Promote other production systems such as cage and intensive fish culture
- f. Promote the establishment of certified hatcheries and procurement of fingerlings from such facilities
- g. Expand and intensify fishing equipment and gear technology for deep lake fishing in Lake Malawi to increase fish catch.

11. Livestock development for diversity

- a. The government's overall livestock development policy is to become self-sufficient in all livestock products and to export any surplus.
- b. Challenges faced- low livestock population, poor animal husbandry and health care, high mortality rate of young stock; inadequate participation of private sector in livestock production; inadequate human capacity at all levels of the industry; rising costs of feed, drugs and other inputs; inadequate health and diagnostic services; land pressure and limited grazing areas, limited ownership and number of breeding stock amongst others.
- c. Broaden livestock ownership to include the poorest of the poor in all gender categories;

- d. Modernize the livestock sector through public-private partnerships that would involve the semi-commercial sectors of the industry;
- e. Strengthen human capacity to deal with issues and challenges facing the industry at various stages;
- f. Promote large scale commercial livestock farming
- g. Promote intensive management and stall feeding

12. Dairy Development

- a. With a population of about 11 million people, the estimated average milk consumption is only 3.8 kg per capita very low as compared with Sub-Saharan Africa, which is estimated at 30.8kg per capita.
- b. NGO sector stimulated the development of a commercially viable smallholder dairy sector resulted in significant increases in rural incomes, employment opportunities, and improve overall performance of dairy business contributes to Malawi's GNP.
- c. Challenges in the dairy sector- low milk prices, unreliable milk collection by milk processors, transport problems for AI technicians, lack of AI equipment, and low competency of AI technicians.
- d. The challenges further complicated by inadequate knowledge in animal husbandry by livestock extension workers who had an average performance score of 70%.
- e. However, farmer AI technicians had a higher average score (74%) which the study considered as satisfactory for farmers. Thus potential for enhancing smallholder dairying and suggest that the use of farmers to support dairy extension work could be an opportunity to complement extension workers.

13. Agriculture Marketing-

- a. The Government recognizes that inadequate access to markets is one of the binding constraints to increasing and reducing fluctuations in smallholder productivity and increasing smallholder share of the gross domestic product (GDP).
- b. Current efforts regarding improvement of access to markets include-
 - i. Reviewing marketing and pricing policies of various commodities of strategic importance
 - ii. Promoting contract farming initiatives, and
 - iii. Collecting and disseminating market information to stakeholders.

- c. Building the capacity of stakeholders in agricultural market information systems and appreciation of domestic and international policy and legal framework.
- d. Develop database and the establishment of agri-business information centers

14. Climate Change and Environmental Issues

- a. Malawi is vulnerable to the effects of climate change because of its reliance on rain-fed agriculture.
- b. The extreme weather events such as drought and floods have resulted in poor crop yields or total crop failure, leading to serious food shortages, hunger and malnutrition.
- c. The most vulnerable groups are rural communities, especially women, children, female-headed households and the elderly.
- d. The link between climate change and agricultural production requires that measures are taken to reduce the impact of climate change and help farmers to adapt to climate change. Policy seeks to urgently implement adaptation and mitigation interventions to minimize future adverse effects of climate change on agriculture.
- e. Improving vulnerability assessment to provide early warning on food security;
- f. Strengthen the capacity of all stakeholders in issues of mainstreaming environmental management in the agricultural sector

15. Food and Nutrition Security

- a. Malawi is committed to reduce by half the proportion of the population that suffers from extreme poverty and hunger and to improve their nutritional status by the year 2015.
- b. Develop programmes that reduce dependency on rain-fed agriculture such as the Malawi Greenbelt Initiative.
- c. Provide support to vulnerable households with production enhancing technologies through direct government interventions, donors and Non-Governmental Organizations.
- d. Promote the production of diverse food crops, fish and livestock to ensure household and national food security

- e. Minimize pre-harvest and post- harvest losses through improved technologies for storage preservation, product development, food processing and construction of metallic silos.
- f. Maintain adequate food stocks to ensure national and household food security through the Strategic Grain Reserves (SGRs).

16. Agriculture Extension Management

- a. Agriculture extension services in Malawi needs to be reformed in line with new challenges and trends-
 - i. Democratization process that empowers farmers to demand more services from the public sector
 - ii. Market liberalization that requires farmers to acquire more skills in producing commodities for different markets
 - iii. Reduction in farm labour and agricultural staff due to, HIV and AIDS, poor nutrition and poor working conditions
 - iv. Decentralization process that now requires that local assemblies and institutions play a greater role in the sector,
 - v. Shrinking public resources and gender disparities in knowledge, skills and opportunities.
- b. Promote agricultural extension pluralism to accommodate different players and using various methods in the delivery of agricultural extension with special emphasis on the strengthening of farmer organizations, lead farmers and greenbelts.
- c. There is an urgent need for retraining and upgrading extension workers, particularly in development and communication theories and methodologies.
- d. Development approaches involves mobilisation and participation of farming community requires speciality skills like communication and social science are required, which is absent.
- e. Setting, monitoring and evaluating standards for the quality of agricultural extension services.
- f. Promoting gender equality and equity in agricultural extension service through gender advocacy and community empowerment to address poverty, malnutrition, environment and HIV and AIDS concerns

- g. **Pre-service training** of extension workers is a key for effective delivery.
- h. All individuals interested to take up professional extension work in both the private and the public sector should undergo requisite training recognized by the central level public sector.

17. Crop Production technologies-

- a. Over the past decades the country experienced chronic food shortage due to low agricultural production.
- b. These include resource poor female, child and elderly heads of households and those with chronically illness.
- c. This is due to a number of factors such as-
 - i. Inadequate access to farm technologies
 - ii. Pre and post-harvest crop losses
 - iii. Drudgery and limited labor
 - iv. Extreme weather events (dry spells, floods)
 - v. Depressed land sizes due to increase in population
 - vi. Low soil fertility due to land degradation
 - vii. Limited credit facilities to enable farmers obtain modern inputs
- d. Promote crop production in areas which have suitable agro-ecological factors with appropriate farming systems
- e. Diversify both food and cash crops for food security, promoting import substitution of expanding exports while accommodating changing market conditions.
- f. Promote the production of drought tolerant crops such as cassava, sweet potatoes, millet, sorghum and yams; and timber and non-timber products.
- g. Strengthen capacity of crop commodity farmer groups to respond to changing circumstances in crop production.
- h. Strengthen staff capacity to enable them articulate crop production delivery services

18. Policy level considerations-

- a. The country's ability to feed its citizens is at risk
 - i. African leaders should make agriculture a key element of all major economic decisions.

- ii. Food security requires the same seriousness and resources as national security
- iii. To provide a premise for the development of sub-sectoral or industry specific policies and legal frameworks
- b. Agricultural exports have remained undiversified, with little value addition.
- c. The new policy calls on extension workers to facilitate collaboration across ministries and non-governmental organizations, however, they are under one ministry - agriculture - does not make extension readily accessible to other ministries.
- d. Land - Sizes, Fragmentation, Distribution and Tenure: how to integrate the land reform issue into a meaningful agricultural growth strategy;
- e. Food Security: Food and Cash Crops Promotion: how to achieve self-sufficiency in food production, or increase food imports, ensuring an adequate national food balance;

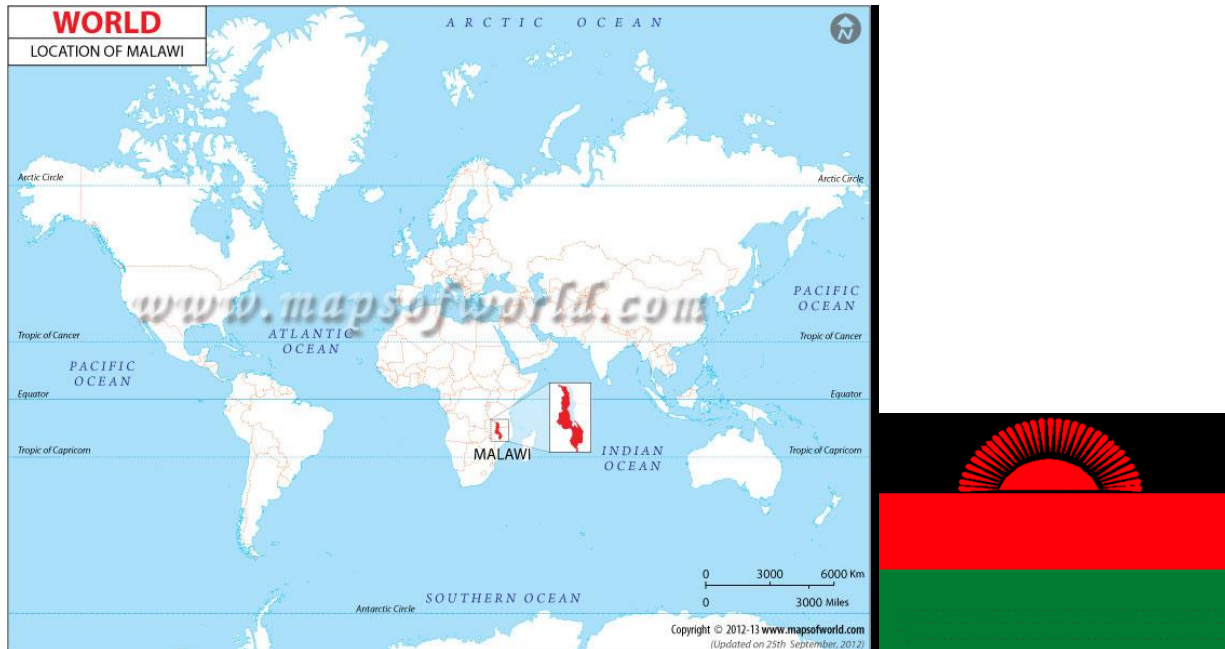
Training Priority wise no. of officers/ participants proposed for capacity building

SN	Training Priority Area	No of trainees Proposed (Approx)
1	Involvement of Private sector, Farmers Organizations and NGOs in extension	10
2	Nutrition and Income security through Horticulture development	50
3	Coordination between various organizations and agencies	30
4	Promoting gender equality and equity in agricultural extension service	20
5	Use of Information and Communication Technologies (ICTs) in Extension	100
6	Develop and use of Irrigation facilities	40
7	Mushroom production- Opportunities and challenges	8
8	Agribusiness opportunities for income security	30
9	Agriculture Mechanization	120
10	Fish production	20

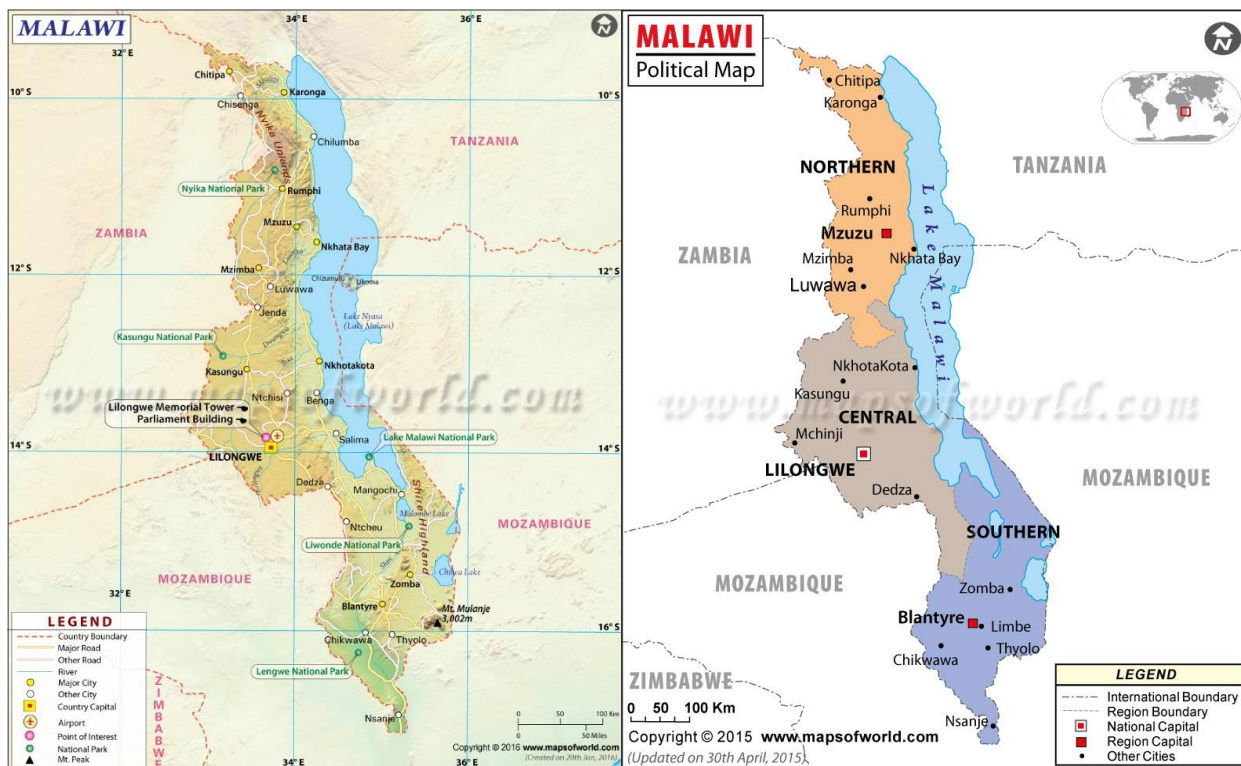
11	Livestock development for diversity	70
12	Dairy Development	70
13	Agriculture Marketing	40
14	Climate Change and Environmental Issues	15
15	Food and Nutrition Security	60
16	Agriculture Extension Management	150
17	Crop Production technologies	80
	Total	913

Annexure: Maps, Charts and Graphs and Pictures

World Map showing location of MALAWI



MALAWI Maps



Malawi Land Cover Map

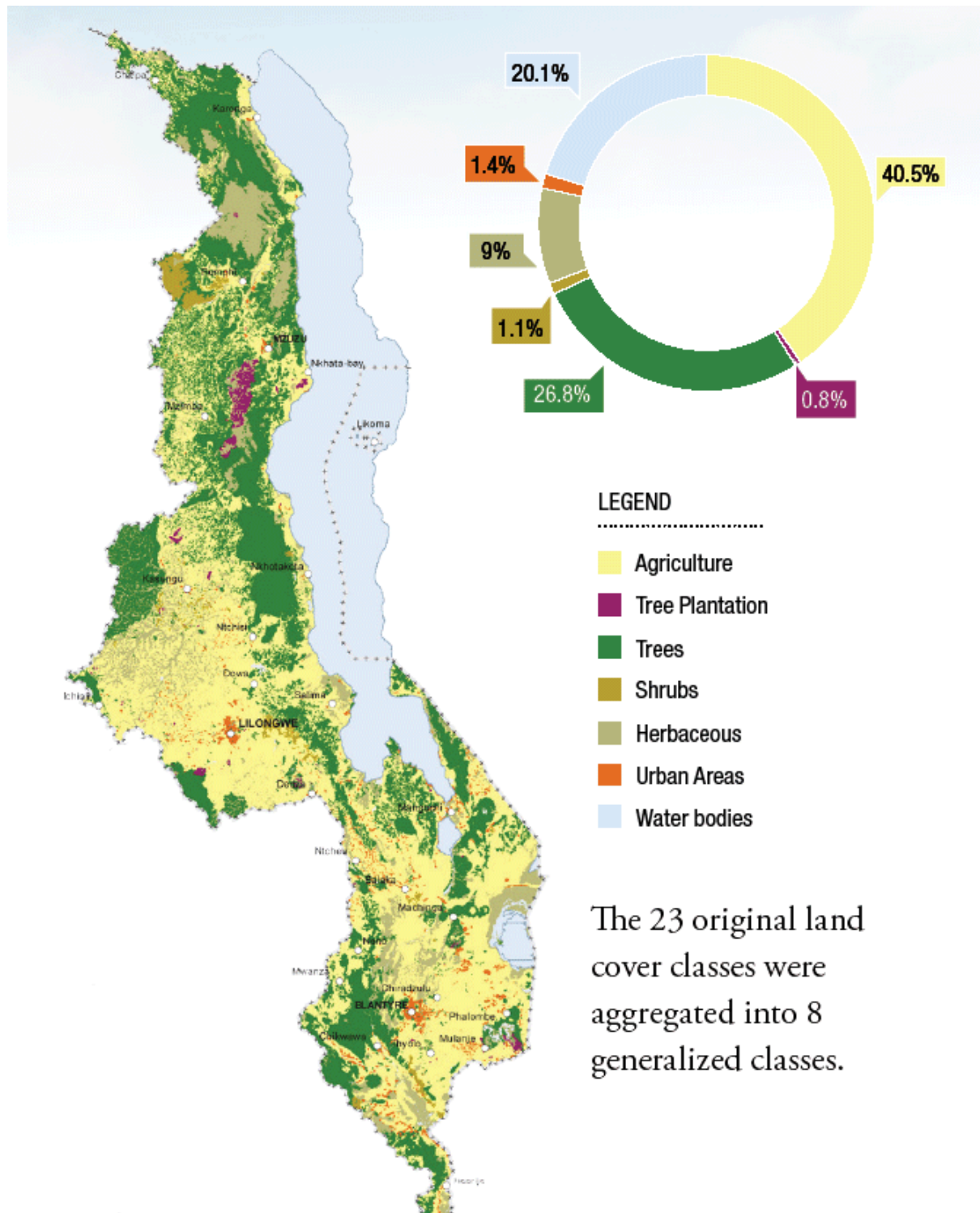


Figure: Organisational Structure of MoAFS

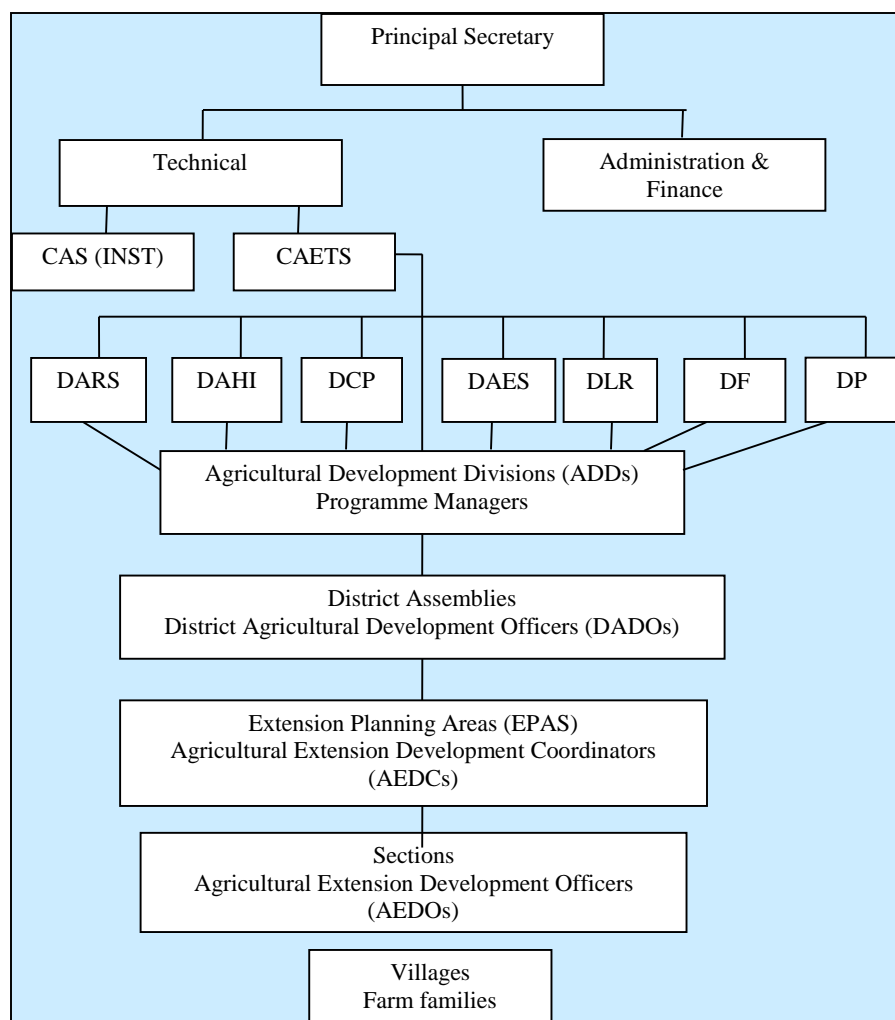


Figure: Comparison of crop yields among developing regions, 1961 to 2011

Cereal Yields (in metric tons per hectare)

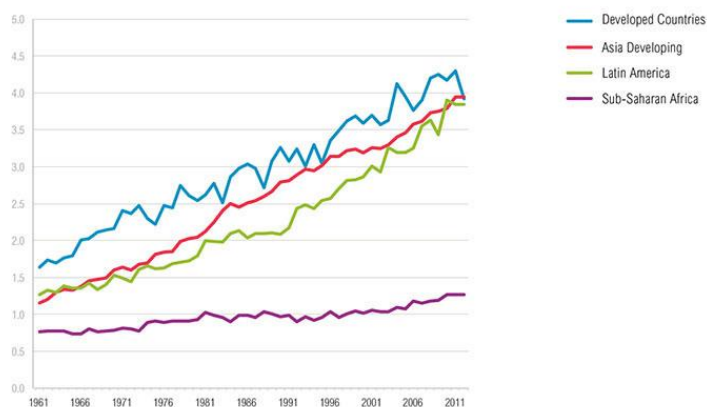


Table: Simplified Groundnut Value chain

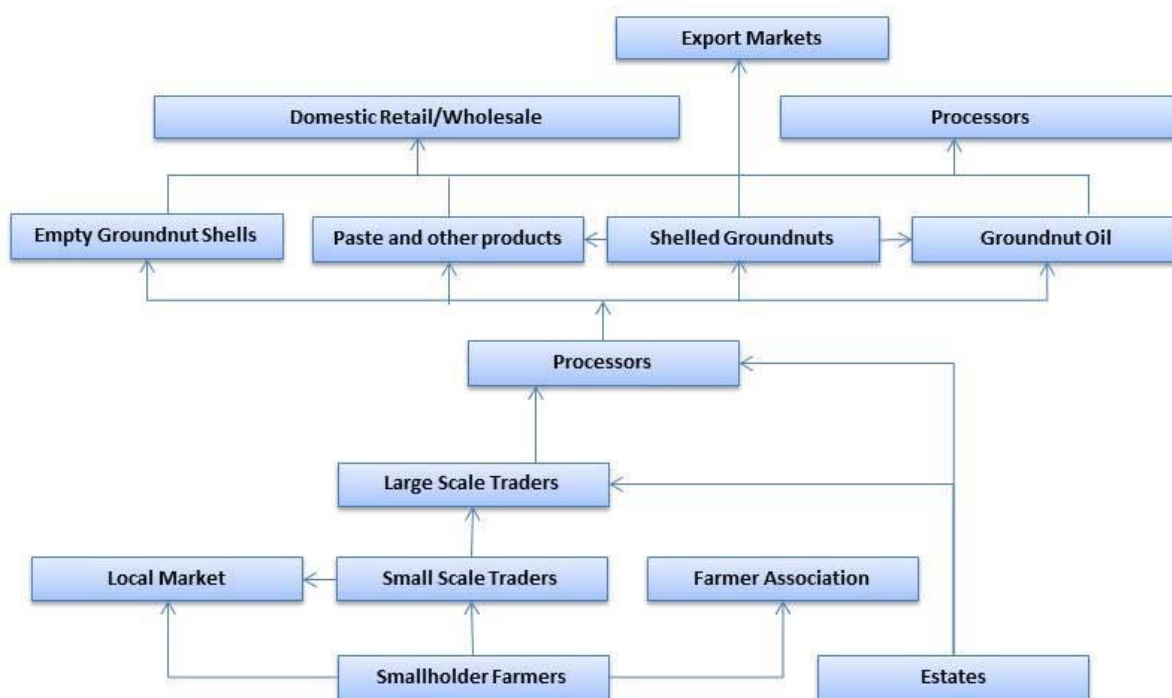
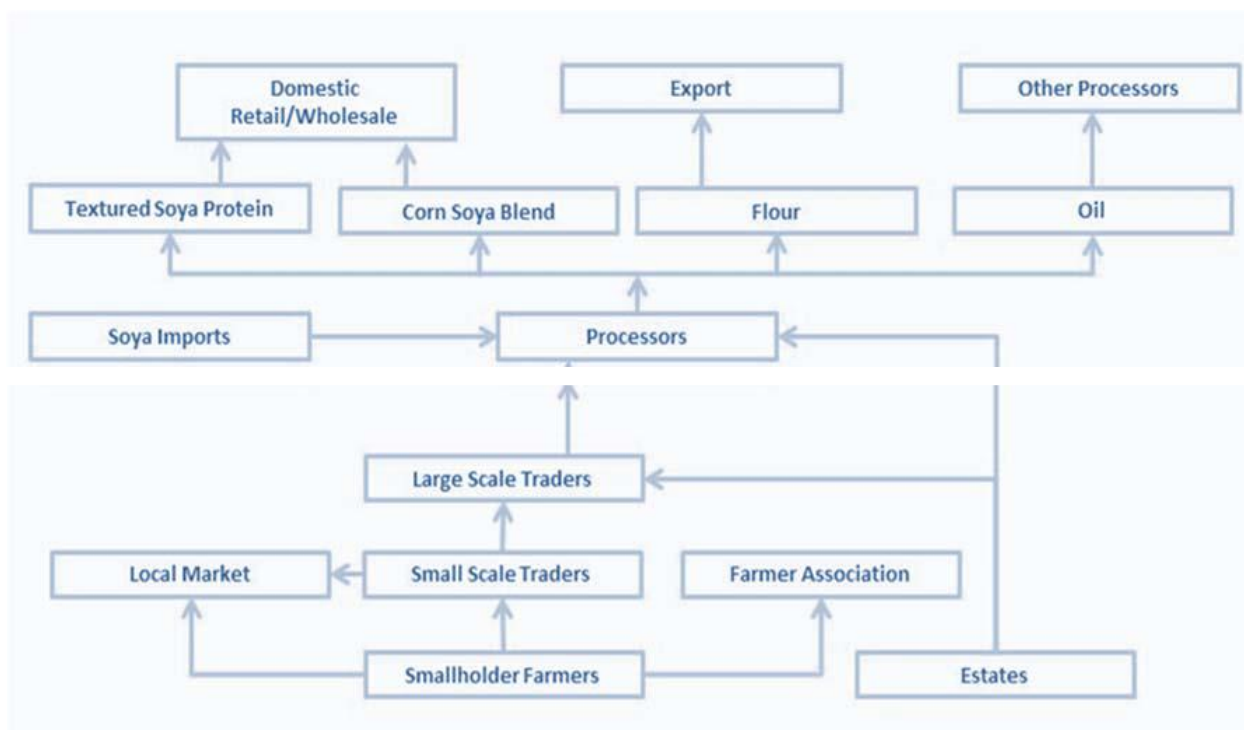
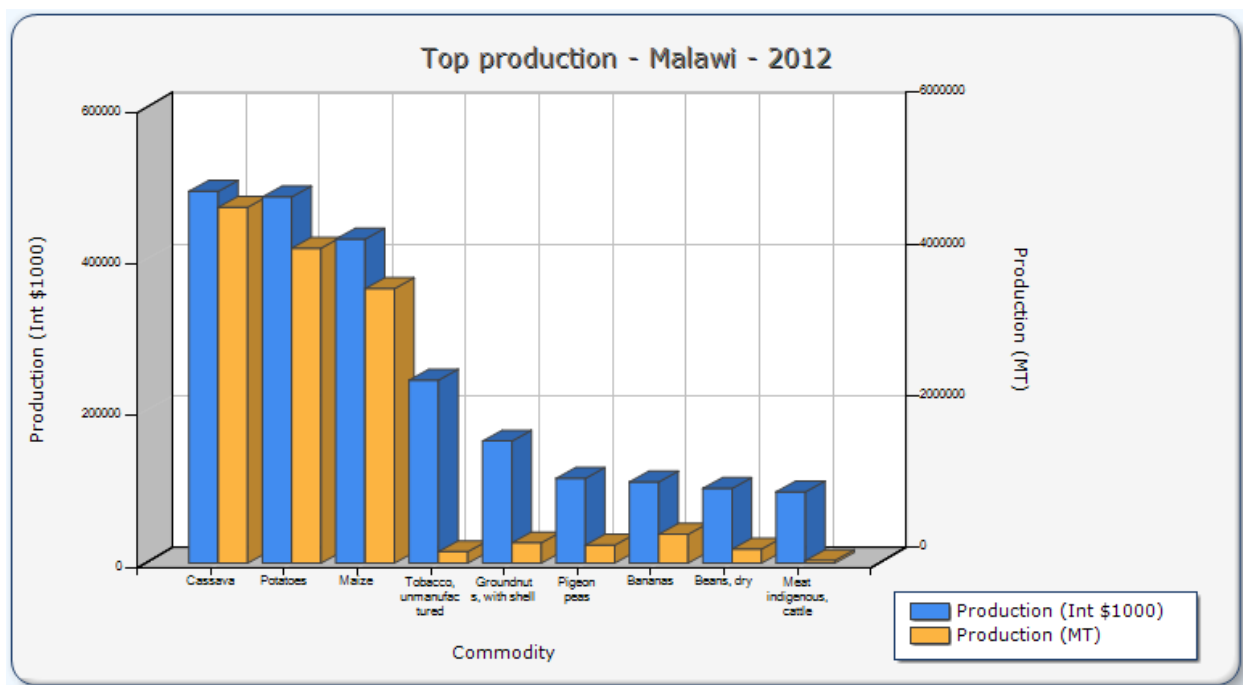


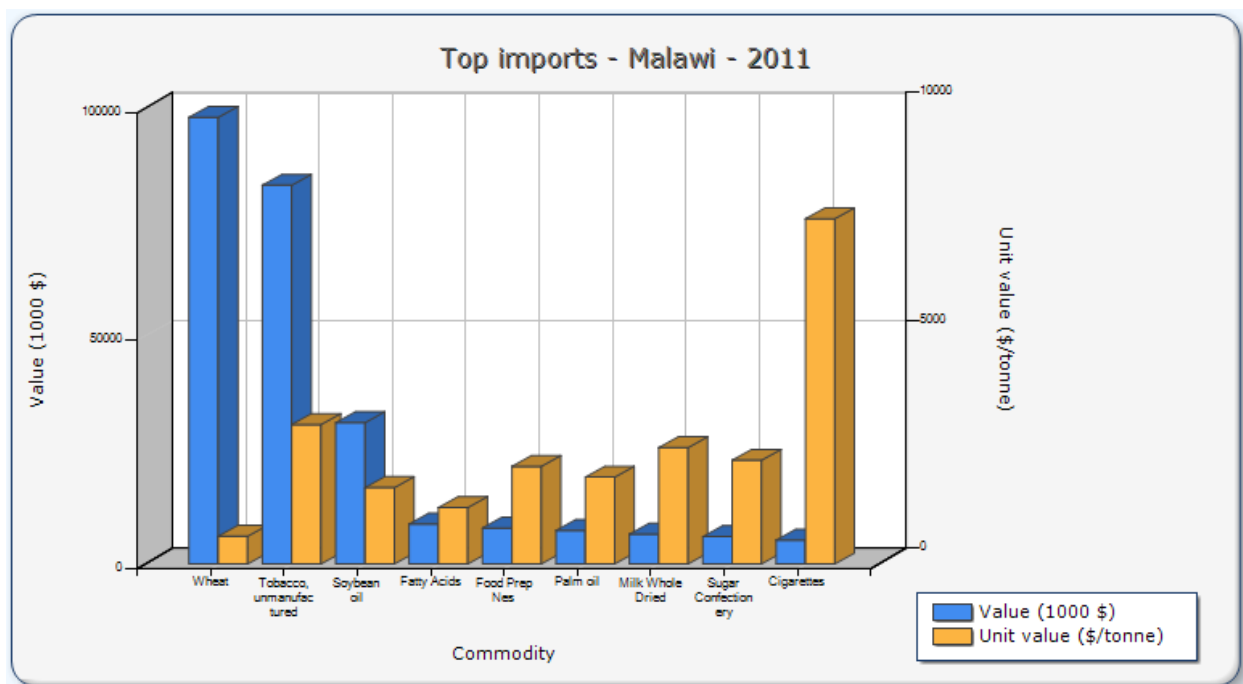
Table: Simplified Soybean Value chain



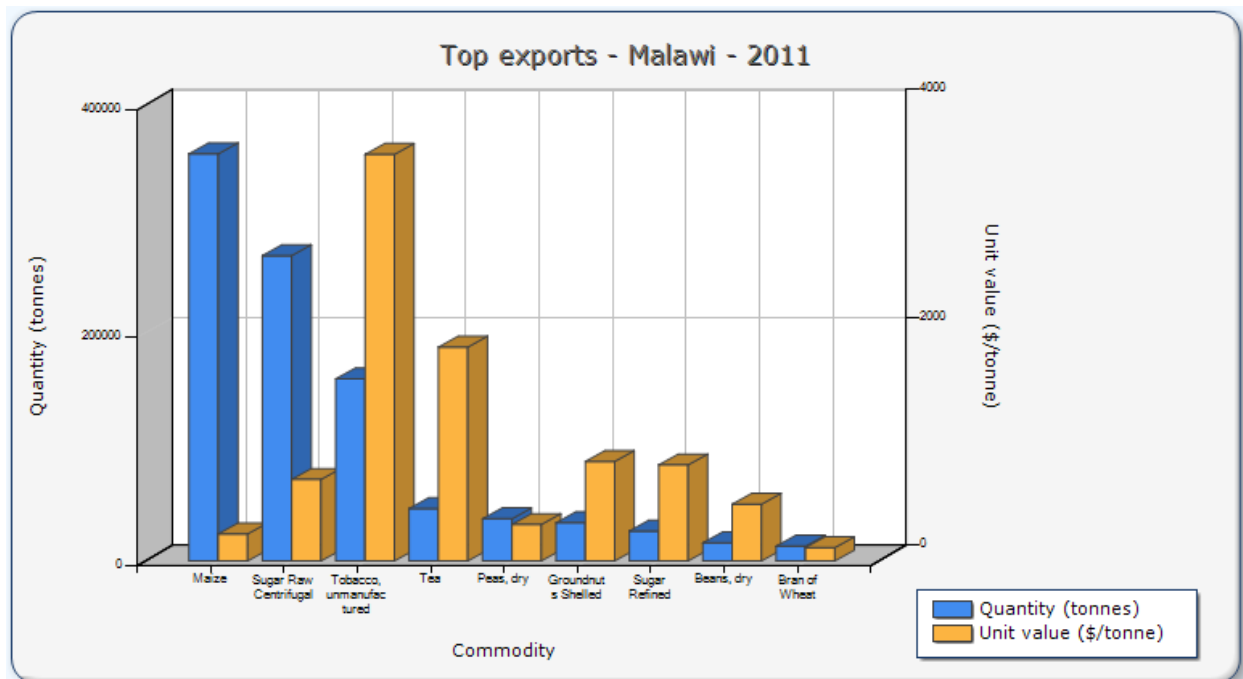
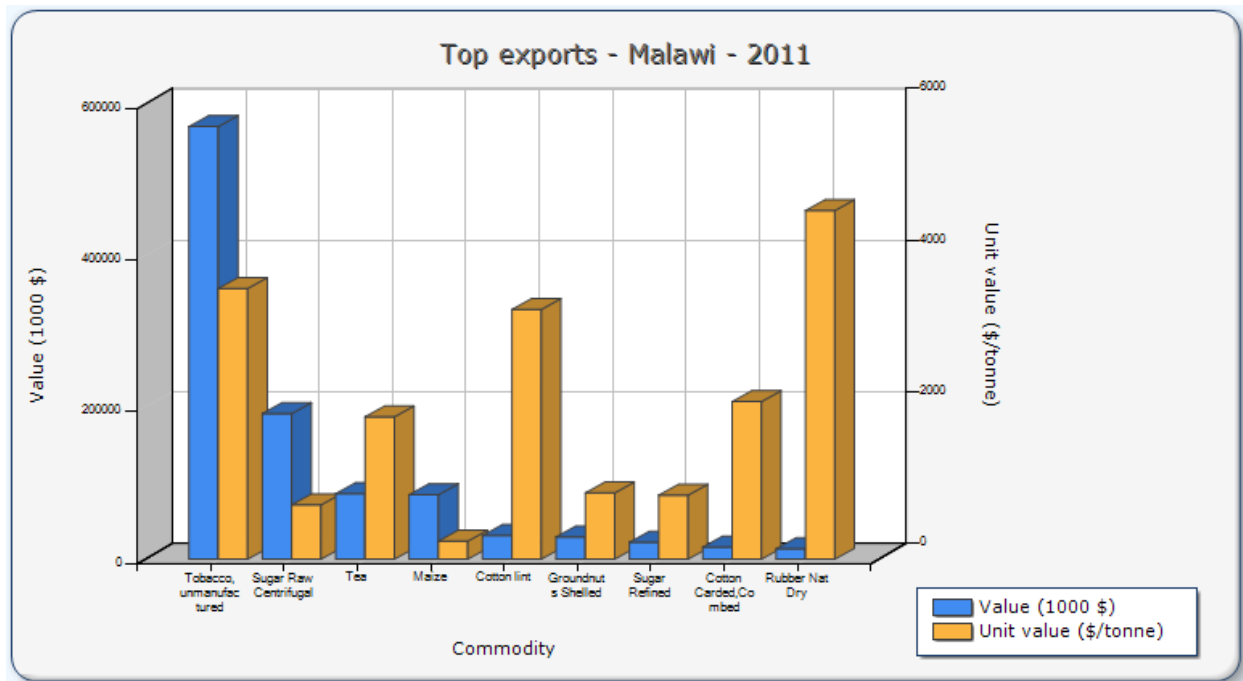
Graph: Production and Value of production of important commodities in Malawi



Graph: Import of important commodities in Malawi



Graph: Export of important commodities in Malawi



Annexure: Pictures



A group of farmers in Malawi learn about sustainable practices



Banana and Tea plantation

Coffee plantation



Paddy cultivation

