

Malawi

# Continental Programme on Post-Harvest Losses (PHL) Reduction

Rapid Country Needs Assessment



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## Glossary

ADB	African Development Bank
ADMARC	Agricultural Development and Marketing Cooperation
ADP	Agricultural Development Programme
ARES	Agricultural Research and Extension Trust
ASWAp	Agriculture Sector Wide Approach
CAADP	Comprehensive African Agricultural Development Programme
CIP	International Potato Centre
CISANET	Civil Society Agricultural Network
COMESA	Common Market for Eastern and Southern Africa
CSF	communal storage facilities
DAES	Department of Agriculture Extension Services
DAHLD	Department of Animal Health and Livestock Development
DARS	Department of Agriculture Research Services
DAS	Development Assistance Strategy
EC	European Commission
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FDI	foreign direct investment
FHA	Farm Home Assistance
FUM	Farmers Union of Malawi
GTPA	Grain Traders and Processors Association
HACCP	Hazard Analysis and Critical Control Point
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IDEAA	Initiative for Development and Equity in African Agriculture
LRSC	Land Resources and Soil Conservation Departments
MACE	Malawi Agricultural Commodity Exchange
MAWTCO	Malawi Warehouse and Transport Company
MBG	milk bulking groups
MBS	Malawi Bureau of Standards
MCF	Malawi College of Fisheries
MEDI	Malawi Entrepreneurial Development Institute
MIRTDC	Malawi Industrial Research and Technology Development Centre
MGDS	Malawi Growth and Development Strategy
MoAFS	Ministry of Agriculture and Food Security
MLT	Malawi Telecommunications
NASFAM	National Small Farmers Association of Malawi
NEPAD	New Partnership for Africa's Development
NFRA	National Food Reserve Agency
RBM	Reserve Bank of Malawi
SARRNET	Southern Africa Roots Crops Research Network
SCPMP	Smallholder Crop Production and Marketing Project
SEDOM	Small Enterprise Development Organization of Malawi
SGR	Strategic grain Reserve
SSLPP	Small Scale Livestock Production Project
TAMA	Tobacco Association of Malawi
TLC	Total Land Care
UNCTAD	UN Conference of Trade and Development

## 1. INTRODUCTION

1.1 The post-harvest chain involves a series of interconnected activities from the time of crop harvest, live animal sales at farm gate, milk at immediate post-milking stage, or fish capture to the delivery of the food to the consumer. The nature of the activities varies considerably according to the type of food and there are major differences among plant products (e.g. grains, roots and tubers, fruit and vegetables and pulses), livestock products (meat, dairy, hides and skins) and fish. As a product moves along the chain, losses may occur from a number of causes. These losses fall into three main categories: (i) quantitative or physical losses which cause a loss in weight of the product; (ii) loss of quality which changes the appearance, taste, texture or nutritional value of the product; and (iii) loss of opportunity for value addition to the product.

1.2 This note describes the outcomes of a rapid assessment of the post-harvest situation in Malawi for selected commodities (maize, cassava, Irish potatoes, soya, fruits, vegetables, animal products and fish) including key constraints, risks and opportunities, and suggests possible priority interventions and next steps/actions to be taken in order to further study post-harvest losses (PHL) reduction needs that may lead to specific projects and/or project components to be proposed to ADB (and other donors) for financing. The annexes provide additional information on country background, value chain analysis, stakeholder analysis and on-going ADB projects and other donor interventions in the country.

1.3 Post-harvest loss reduction activities have a major economic impact and should increasingly become a major focus in development strategies: carefully selected interventions leading to reductions in PHL are likely to be much more cost-effective than investments in additional production. Increasing production implies using scarce and costly resources through intensive farming practices and expansion of cultivated areas. The marginal environmental cost of qualitative and quantitative saving through improved post-harvest techniques is generally much lower than trying to reach the same value through additional production. PHL reduction aims at maintaining or optimising the value of already existing (produced) products through improved and cost-effective conservation and value-addition strategies.

1.4 Furthermore, post-harvest activities generate on- and off-farm employment opportunities in rural areas, reduce rural exodus, enhance rural income, contribute to value-addition and increased competitiveness. Post-harvest activities generally belong to a more formal sector and should, directly (tax on revenues) and indirectly (VAT) participate in increasing public revenues. In addition, post-harvest activities, including transformation and marketing, are to a large extent assumed by women thereby contributing to increased female empowerment.

1.5 Information on PHL in Malawi was obtained through desk study of existing documentation and a field mission<sup>1</sup> undertaken in August 2009. A launching meeting was held in Lilongwe which brought together stakeholders from government departments, civil society, the private sector and research institutes. Follow-up meetings were held with various government officials and institutions, such as Crop Development, Agricultural Research Services and Agricultural Planning (Ministry of Agriculture and Food Security), Debt & Aid Division (Ministry of Finance), the Fisheries Department (Ministry of Lands, Natural Resources and the Environment) and the National Food Reserve Agency (NFRA). The mission also met with private sector representatives, farmers, traders and food processing organisations. Discussions were held with representatives from the donor community, including World

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<sup>1</sup> The mission consisted of Mr Vinda H. Kisyombe, Agricultural Economist of the ADB Office in Malawi, Ms. Stephanie Gallatova, Agro-Industry Officer, FAO (AGST) and Ms Julia Seevinck, Associate Professional Officer, FAO (TCIS)



Bank, IFAD, WFP and the FAOR<sup>2</sup>. An initial list of commodities to be considered for the PHL needs assessment was agreed upon including maize, irish potatoes, cassava, groundnuts, soya, tobacco, sugar, horticultural crops, animal products and fish. Furthermore, a screening of ADB's Smallholder Crop Production and Marketing Project was undertaken to identify opportunities to include and/or improve PHL reduction in the project activities.

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<sup>2</sup> See Annex 12 and 13 for a complete list of stakeholders met and the mission itinerary

## 2. COUNTRY OVERVIEW

2.1 Malawi is a landlocked country with a population of about 13.6m<sup>3</sup> (2006; IMF estimate) over an area of 118,500 km<sup>2</sup> with five inland lakes accounting for 24,208 km<sup>2</sup>. It is bordered by Mozambique to the south and east, Zambia to the west and Tanzania to the north. Malawi has one of the lowest levels of per capita income in the world (US\$169 in 2007)<sup>4</sup> and poverty has been widespread over the years: in 2004, some 52.4% were living below the poverty line and 22.4% were unable to meet basic food requirements. Life expectancy in Malawi is amongst the lowest in the world, 46.3 years in 2005, primarily caused by the spread of HIV/AIDS (estimated at 12%), malaria and tuberculosis.

2.2 Malawi is highly dependent on agriculture, which provides livelihoods for around 85% of the population, contributes 38% of GDP and generates over 80% of export earnings. The agricultural sector is characterised by two very diverse sub-sectors; smallholder farmers and commercial estates. Maize and tobacco are Malawi's two most important crops and contributed 25% and 15% respectively to agricultural GDP in 2004. Other important crop categories include pulses and oil seeds (8%) vegetables (7%), root crops (7%) and groundnuts (4.5%). Whilst maize is grown primarily for domestic consumption, tobacco is Malawi's largest export commodity, accounting for over 50% of export earnings. Other important exports are sugar and tea. Together, tobacco, sugar and tea account for around 70% of total exports. Non-traditional exports have however shown consistent high growth and comprise mainly of nuts, rubber, rice, spices, wood products and clothing. During years of good harvests, maize can also constitute a substantial export. However, the onset of uranium exports from the Kayelekera mine is expected to drastically alter Malawi's export profile, with uranium competing with tobacco to become the largest export.

2.3 The economy's reliance on agriculture makes it highly vulnerable to weather conditions and changes in international prices for its export commodities. Smallholders who rely on rain-fed agriculture are particularly vulnerable. Malawi's rural population density is one of the highest in Sub-Saharan Africa, at 2.3 rural people per hectare of agricultural land, compared to 0.4 people for the sub-continent as a whole. As a result, most Malawian farmers cultivate small and fragmented land holdings, with a national average plot size of 1.13 hectares.

2.4 Malawi is highly dependent on imports, including capital goods, industrial inputs and consumer items. In years of drought and failed maize harvest, maize has also been one of the major import items. In 2008, total exports were estimated at US\$830m against total imports of US\$1,587m, resulting in a trade deficit of US\$757m. However, these statistics do not capture the large volume of unrecorded trade that takes place across Malawi's borders, which may well outweigh the value of recorded trade. Malawi's principle export destinations are South Africa, Germany, Egypt and US. Food imports are mainly from the region i.e. South Africa, Zambia, Zimbabwe and Mozambique.

2.5 The growth of the retail sector, including supermarkets, has been restricted by the limited purchasing power of Malawians, particularly those in rural areas. The main retail chains are the People's Trading Company owned by Press Corporation Ltd, and Metro of South Africa. However, the entry of two South African chains; Shoprite-Checkers in 2001 and Game in 2006 has broadened the choice of goods available, increased competition and lowered prices. Nonetheless, a great deal of trading activity is informal, carried out by street vendors selling a wide range of products.

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<sup>3</sup> 2006; IMF estimate

<sup>4</sup> Economist Intelligence Unit, Country Profile 2008

### **3. POLICY AND INSTITUTIONAL FRAMEWORK**

#### **A. POLICIES AND STRATEGIES RELATED TO POST-HARVEST**

3.1 Since the early 1980s Malawi's economic policies have been influenced by the World Bank and IMF who provided support for the country's structural adjustment programmes. The policy shifted to withdrawal of government interventions in favour of encouraging market-led private sector growth but this caused widening income disparities. While market reform helped the performance of the commercial estates, there was little growth in the smallholder sector. The market reform policies were not sufficient to generate agricultural growth in the smallholder sector because complementary policies to address technological, land and credit constraints were not developed.

3.2 With regard to land tenure, the pattern of land ownership in Malawi still remains skewed in favour of large plantation owners who hold the best agricultural land. This has left hundreds of thousands of Malawians either landless or occupying plots that are too small to be viable for farming. A new land policy was drawn up in 2002 and seeks to redress these imbalances, partly through government procurement of land from commercial estates that are lying fallow and redistributing it to 20,000 landless families. In addition, customary land, which makes up the majority of rural smallholders' land, is to be recognised as private land under the new policy, giving beneficiaries title deeds that give them the right to borrow against the land. However, progress on implementing land reform has been slow.

3.3 The period of economic reforms has been characterised by maize shortages and increased imports of maize to satisfy domestic demand. This has been attributed to poor weather conditions, low maize productivity and high population growth. However, the withdrawal of subsidised fertilizer, making it inaccessible to poor farmers, was the dominant factor. The input subsidy programme which started in 2006 has led to significant growth in maize production and exportable surpluses in the last two seasons (see paragraph 4.1 for more details). This emphasises the link between food security and access to maize inputs for smallholder farmers.

3.4 The overriding goal of economic policy is now to alleviate poverty. In this regard, the focus of the Malawi Growth and Development Strategy (MGDS 2006-11) is to achieve poverty reduction through sustainable economic growth and infrastructure development. The strategy places emphasis on six priority areas: a) agriculture and food security; b) irrigation and water development; c) transport infrastructure; d) energy generation; e) integrated rural development; and f) management of nutritional disorders and HIV/AIDS. The Government is increasingly taking the lead in coordinating donor support. As part of the Malawi Growth and Development Strategy process, the Government has developed a Development Assistance Strategy (DAS) which is a coordination plan aimed at improving the effectiveness of aid inflows to Malawi and defining what Government and Development Partners have to do to implement the Paris Declaration on Aid Effectiveness that was signed in March 2005.

3.5 The Government of Malawi formulated the Agricultural Development Programme (ADP 2008-2012) aimed at increasing agricultural productivity, contributing to 6% growth annually in the agricultural sector, improving food security, diversifying food production to improve nutrition at household level and increasing agricultural incomes of the rural people. The ADP has since been revised and renamed the Agriculture Sector Wide Approach (ASWAp).

3.6 The Agriculture Sector Wide Approach (ASWAp) is a unified agricultural sector investment programme and is based on the priority agricultural elements of the Malawi Growth and Development Strategy (MGDS) and is also consistent with the Comprehensive African Agricultural Development Programme (CAADP) under the umbrella of the New Partnership for Africa's Development (NEPAD). The ADP is led by the Ministry of Agriculture and Food Security (MoAFS)

and envisages a single comprehensive programme and budget framework with a process for improved donor coordination, harmonization of investment, and alignment of government and donor programmes and activities (see annex 4 for overview of main focus areas and PHL reduction activities). The total ASWAp budget over 4 years is set at around US\$ 1,330,550,000.

3.7 The average annual budget of the ASWAp (2008/09 – 2011/12) has been estimated at about US\$ 266 million. MoAFS allocates budgets as follows: food security at 64%, with the majority going to maize self-sufficiency. Commercial Agriculture, Agro-processing and Market development will receive 14%, Sustainable Land and Water management 13 %, and Institutional Strengthening and Capacity Building 8%. Key support services and cross-cutting issues are streamlined and embedded into the budgets of the three focus areas. Interestingly, the component related to the development of Public Private Partnerships has not been budgeted for. The summarized breakdown of the programme budget is attached as annex 5.

## **B. PUBLIC AND PRIVATE INSTITUTIONS INVOLVED IN POST-HARVEST**

### **Public Institutions**

#### **Ministries**

3.8 Ministry of Agriculture and Food Security (MoAFS) has 8 departments (see Annex 9 for a SWOT analysis):

1. Department of Crop Development
2. Department of Agriculture Extension Services (DAES)
3. Land Resources and Soil Conservation Departments (LRSC)
4. Department of Animal Health and Livestock Development (DAHLD)
5. Department of Agriculture Research Services (DARS)
6. Fisheries Department
7. Planning Department
8. Administration and Support Services Department

3.9 The responsibility for post-harvest activities is spread across several departments; namely crop development; research; extension; animal health and livestock development; and agricultural planning. The department of crop development has two research stations; Chitedze and Bvumbwe where research on post-harvest issues is conducted.

3.10 At the national level, other public institutions that play a role in the agricultural sector include: Ministries of Irrigation and Water Development; Trade and Industry; Local Government and Rural Development; Economic Planning and Development; Office of the President and Cabinet and Department of Public Procurement. These institutions have overlaps and duplications in the implementation of programmes leading to poor coordination. The MoAFS plans institutional reform across the sector to improve efficiency and coordination.

#### **Agricultural Development and Marketing Corporation (ADMARC)**

3.11 In the period before market liberalization, the parastatal ADMARC had sole responsibility for purchase, storage and marketing of maize and other major commodities and also managed the national Strategic Grain Reserve. ADMARC had a country-wide network of storage and marketing centres where farmers brought their produce for sale at a price fixed by government. Since

liberalization, ADMARC's role has diminished; it now has to compete against other traders and leases out some of its market and storage facilities to the private sector. In 1998, the government agreed to eliminate price support operations for maize by ADMARC and prepare it to operate on a strictly commercial basis. It agreed to establish a National Food Reserve Agency (NFRA – see below) to handle disaster relief involving the management of the Strategic Grain Reserve in place of ADMARC, with a clear delineation of responsibilities between the two agencies. Currently, due to shortage of funds, ADMARC no longer purchases commodities other than maize. However, government is reluctant to dismantle ADMARC completely due to the role it has played in national food security and provision of a guaranteed market for small farmers, particularly in remote rural areas where private traders have limited access. Government therefore continues to allocate some recurrent funds to ADMARC in order to meet its social marketing objectives. ADMARC still owns warehouses in various locations around the country and have started renting out some of their warehouse facilities.

### **National Food Reserve Agency (NFRA)**

3.12 Immediately upon its establishment in 1999, the NFRA engaged in substantial price stabilization operations, thus taking over the price support function relinquished by ADMARC. NFRA fulfils the role of managing the Strategic Grain Reserve. Whereas ADMARC buys mostly directly from farmers, NFRA buys mostly from traders and some organised farmers (contract farming). Stock levels are currently around 120,000 MT countrywide. NFRA has storage capacity of just under 300,000 MT spread throughout the country. In Lilongwe NFRA has silo capacity of 180,000 MT, in addition to this they own some warehouses in the capital which are let out to WFP (see table 1, p. 9).

### **Malawi Bureau of Standards (MBS)**

3.13 The Malawi Bureau of Standards is a statutory organization established in 1972 by an Act of Parliament. The MBS was established with a mandate to promote standardization of commodities and of their manufacture, production, processing or treatment; and further to provide for matters incidental to, or connected with standardization. Its mandate includes standards development, inspection and certification, product testing, metrology services (verification, inspection and calibration) and industrial research and consultancy in areas such as product development, food hygiene and safety and environmental protection. It also provides installation, repair and maintenance service for scientific equipment and instruments.

3.14 In addition to its head office, MBS has trade metrology offices in Blantyre, Lilongwe and Mzuzu and four border offices at Mwanza, Songwe, Muloza and Dedza. 64 of the Bureau's 130 staff are engaged in administration, with the remaining 66 spread across standards development (12), Quality Assurance (13), technical services (25) and metrology (12). Discussions with various stakeholders indicate that MBS is understaffed and under-resourced to carry out its mandate effectively, particularly in relation to increasing requirements for producers and processors to comply with international food safety legislation and quality standards. MBS has not yet attained international accreditation, which forces exporters to send product samples to laboratories outside Malawi for third party verification.

### **Small Enterprise Development Organisation of Malawi (SEDOM)**

3.15 SEDOM was established as a Trust in 1982 by GOM with assistance from the EEC and is a Key Support Organisation under the Ministry of Industry and Trade. It was created to contribute to national socio-economic development through the provision of financial and non-financial assistance to Malawian-owned operating and oncoming small-scale enterprises. SEDOM originally provided four primary services: credit extension; business advisory services, identification of new technologies; and provision of workshop space through incubators. Currently, SEDOM focuses mostly on credit delivery and workshop space and less on the provision of non-financial services.

### **Malawi Industrial Research and Technology Development Centre (MIRTDC)**

3.16 MIRTDC is a non-for-profit institute established in 1991 under the Ministry of Industry and Trade. Its mandate includes the development of agricultural machinery, energy and environmental management and agro-processing. MIRTDC focuses on research and technology development particularly in response to the needs of micro, small and medium-size enterprises (MSMEs). However, MIRTDC faces some fundamental constraints that impact on the effectiveness of its operations; high rates of attrition of qualified and experienced professionals (out of 57 positions only 31 positions are filled), inadequate and antiquated equipment, and lack of vehicles which prevents staff from conducting field research or supervising and monitoring projects<sup>5</sup>. These factors have severely limited the outreach and dissemination capacity of the institute.

### **Malawi Entrepreneurial Development Institute (MEDI)**

3.17 MEDI is an institute under the Ministry of Industry and Trade with the mandate to build capacity of small-scale enterprises in entrepreneurship and business management.

### **Bunda College**

3.18 The Department of Home Economics and Nutrition has expertise in small-scale, appropriate technologies for food processing, but its outreach and dissemination are limited. The college also provides some post-harvest training but lacks funding for conducting systematic research.

## **Private Sector**

### **Malawi Agricultural Commodity Exchange (MACE)**

3.19 MACE provides daily information by internet and SMS on wholesale prices of main commodities in major markets in Malawi. It also provides regular information on contract bids and other market opportunities in Malawi and the sub-region. MACE is a new privately owned company, based on the Agricultural Market Information System project supported by IDEAA. This is described in more detail in Section 4: private-sector activities.

### **Grain Traders and Processors Association (GTPA)**

3.20 GTPA was registered as an association in 2006 and is funded by membership fees and a grant from the Regional Agricultural Trade Expansion Area (RATES), managed by Chemonics and funded by USAID. It has a membership of approximately 222 trading and processing companies; large, small and affiliates. The strategic objective of GTPA is to create an enabling environment for the private sector to operate and strengthen market institutions to reduce transaction costs and improve market performance. The activities of GTPA are described in more detail in Section 4: private sector activities.

### **Africa Invest (Malawi) Ltd**

3.21 Africa Invest is a foreign private investment with seven large-scale farms around Malawi producing a variety of crops and also sourcing from about 5,000 outgrowers. The activities of the company are described in more detail in section 4: private sector activities.

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<sup>5</sup> MIRTDC Strategic Plan 2007-2012

## **Civil Society, NGOs and Other Support Institutions**

### **National Small Farmers Association of Malawi (NASFAM)**

3.22 An independent, smallholder owned organization comprising approximately 100,000 small-scale farmers, which provides business services to its members. NASFAM has been very successful in the past few years, particularly in its transformation of the groundnut value chain by enforcing strict quality assurance measures amongst its members and providing extensive training and capacity building. However, a number of NASFAM's core functions are funded or facilitated by donors (e.g. development of marketing linkages with European buyers, procurement of technologically advanced processing equipment and development of road and market infrastructure). This raises questions about the sustainability of the organization if donor support were to be withdrawn. NASFAM is described in more detail in section 4: private sector activities.

### **Farmers' Union of Malawi (FUM)**

3.23 The FUM is the national farmer owned organization working with 21 commodity associations and one co-operative society. It has a membership of 2,400,000 farmers i.e. significantly larger than NASFAM. FUM's goal is to establish a strong apex body for all farmers and its objectives are to build capacity of farmer organizations, lobby government to promote farmer interests and source private/public funding to develop farmer entrepreneurial skills. However, FUM's large membership exacerbated by inadequate funding makes it a challenge to provide adequate services to its members.

### **IITA/SARRNET**

3.24 The Southern Africa Root Crops Research Network is a regional branch of the International Institute of Tropical Agriculture. It conducts research on production and post-production aspects of root crop development and disseminates the findings. In Malawi, SARRNET has introduced improved, disease resistant varieties of cassava and sweet potato and been active in trying to develop cassava into a commercial commodity. In this regard, it has introduced improved processing technologies and trained fabricators in the manufacture of improved processing equipment. SARRNET is one of the main implementing partners in the "Enhancing food security in cassava-based farming systems project" managed by FAO and funded by the Italian government.

### **Civil Society Agricultural Network (CISANET)**

3.25 CISANET is the coordination body for Malawi's civil society and the NGO sector. It has a membership of 80 NGOs and a number of individuals, mostly researchers. The organization has a number of thematic working groups including: marketing; budget advocacy; livestock and irrigation. CISANET's main functions are advocacy on food policy and development of district coordination systems for information sharing and advocacy as well as information sharing at national level.

### **Total Land Care (TLC)**

3.26 TLC is a NGO building capacity of farmers in improved production technology, good agricultural practices and farm management. TLC also provides some training in business management and enterprise development. TLC is a main implementation partner in the "Enhancing food security in cassava-based farming systems" project as above.

## 4. POST-HARVEST SITUATION

### A. ANALYSIS OF COUNTRY-WIDE ISSUES THAT AFFECT POST-HARVEST SITUATION

#### Storage Systems and Issues

4.1 Information on storage capacities of perishable commodities is not easily available. This section will therefore focus on the available information on storage capacity in the country for grains. Estimated NFRA storage capacity is as presented in table 1:

Table 1. NFRA storage capacity

Location	Capacity
Central silos Lilongwe:	180,000 MT
Zomba:	8,000 MT
Blantyre:	30,000 MT
Mangochi:	8,000 MT
Mangochi:	20,000 MT
Total:	246,000 MT
Mzuzu (under construction):	20,000 MT
Luchenza (under construction):	20,000 MT

Source: NFRA

4.2 It might be wondered why, with an existing capacity of 246,000 MT and a Strategic Grain Reserve (SGR) stock level of only 120,000 MT, NFRA sees the need to construct additional warehouses in Mzuzu and Luchenza with additional 40,000 MT capacity. The rationale behind this strategy is to reduce maize transport costs and ensure grain is available directly in the locations where it is needed. However, this strategy will also create significant surplus capacity which will incur maintenance costs if it cannot be rented out to the private sector.

4.3 ADMARC has a country-wide storage capacity of 458,000 MT spread across 310 locations. 270,000 MT of this existing capacity has been earmarked for purchase by the new privately owned Malawi Warehouse and Transport Company. However, many of the structures require substantial rehabilitation and this will require significant investment.

4.4 Total warehousing capacity of GTPA members is estimated at 259,000 MT. Interestingly, this is divided into 190,000 MT in Central region and 69,000 MT in Southern region. The private sector does not have significant storage capacity in Northern region as this region is generally poorer and more remote, with limited access. Warehouses operated by the private sector are strategically located in urban areas on tarred roads, thus facilitating access. They are generally served with running water, toilets, electricity and communication facilities, making storage and marketing operations more efficient.

The storage systems adopted by the private sector highlight the contrast with the social marketing objectives of ADMARC, which maintained a country-wide network of storage and marketing centres with outreach to all parts of the country. ADMARC has a total of 310 market centres in 27 districts country-wide. The vast majority of these do not have water, electricity, sanitary facilities (toilets) or telecommunications and can only be reached by earth roads, making access difficult, particularly during the rainy season. Although ADMARC's country-wide network of depots was designed to reach farmers



in remote parts of the country where private sector presence is weak or non-existent, the poor state of the storage facilities, lack of utilities and the difficulty in access makes these marketing centres inefficient and unable to fulfil their function of storing grain in good condition and providing a ready market for small-scale farmers.

### **Market Information**

4.5 Market information systems are affected by ICT infrastructure. Malawi Telecommunications (MTL) was privatised in 2006 with the government retaining a 20% stake. The privatisation of MTL is seen as important if telecom services are to be improved. Only a small percentage of the population had access to mainline telephones (0.8%), mobile phones (3.3%), computers (0.2%) or the Internet (0.5%) in 2007.

4.6 MACE provides daily price bulletins on 51 commodities in 17 national wholesale markets. More details on MACE are in Section 4. MoAFS has nationwide enumerators who provide weekly reports on trends in local markets by cell phone. The National Task Force on Food Security disseminates this information through a booklet, but according to the MoAFS's own admission, not many people are aware of or use this system. However, this information is valuable for the preparation of MoAFS's annual agricultural statistical bulletin.

4.7 GTPA is quite well connected to regional market information networks for grains and is linked to COMESA, to the East African Grains Council and to the Regional Agriculture Trade Intelligence Network South Africa.

### **Agro-processing**

4.8 There are around 100 industrial companies in Malawi which together accounted for 11% of GDP in 2004. Within this sector, agro-processing and beverages/tobacco industries accounted for 3.9% and 2.4% of GDP respectively. Most manufacturing is for local consumption but the development of industry is undermined by competition from cheap imports which come from Kenya, Tanzania and South Africa. In comparison, Malawi's manufacturers must contend with unreliable water and electricity supply, poorly developed infrastructure and high costs of private-sector borrowing. Development of export oriented industries is further constrained by the high cost of long distance transport which is many times higher than that of other land-locked countries such as Zambia.

4.9 There are several large agro-processing and agro-industries in Malawi. These include: Rab Processors (large milling and processing company with a national network of warehouses and distribution points. Main products are maize meal, wheat flour and cereal blends); Universal Industries (largest agro-processing company in Malawi with a national network of warehouses and distribution points. Main products are maize meal, wheat flour, biscuits, potato crisps and French fries. Universal is the only company in Malawi currently purchasing cassava chips as a partial maize substitute in its biscuit formulation); CP Feeds (large-scale feed manufacturer selling feed mainly to the poultry industry. Purchase large quantities of maize locally and also import when necessary); Bakhresa Industries (large milling and processing company producing maize meal, wheat flour, cereal blends, biscuits and other bakery goods); Fruit Canning; Dairy Processors Association Limited (representing the six main processors concentrated around Blantyre, Lilongwe and Mzuzu); and Chemicals and Marketing (supplying a range of agricultural inputs including pesticides, fertilizers and seed).

4.10 There is very little agro-processing in the smallholder sector and most smallholder farmers sell raw agricultural produce without adding value. For the main cash crops, such as tobacco,

groundnuts and cotton, which are mainly grown by smallholder farmers, there is no value addition by smallholder farmers. However, in some cash crops such as cotton, sugar, tea and coffee, smallholder farmers are linked to commercial processing facilities and value addition takes place. For example, in the coffee sector, the cooperatives have their own processing facilities and smallholder farmers are producing some of the final products such as Mzuzu coffee that is sold in retail markets both in Malawi and export markets.

4.11 The government has prioritised promotion of small-scale agro-processing, particularly of cassava, fruits, vegetables and oilseeds, in an effort to create domestic value added for import substitution. Processing of highly perishable commodities such as cassava, fruits and vegetables would also significantly reduce post-harvest losses. However, local processed products will face tough competition from South African imports where the agro-processing sector is more developed and can supply well packaged products of consistent quality at competitive prices.

4.12 Firewood and charcoal are Malawi's main source of energy. It is estimated that fuelwood provides about 91% of the country's energy needs, with 80% consumed by households and the remainder used by agro-industries, particularly for curing tea and tobacco. Demand for fuelwood is rising and contributing to severe deforestation. Malawi's electricity supply is unreliable and does not meet domestic demand. Lack of reliable electricity has had a severe impact on enterprise productivity, especially for those firms that cannot afford their own generators. Power outages and surges from the public grid are frequent and inflict severe costs on business. In 2004, businesses experienced power disruption on an average of 50 days, compared to 15 days in Zambia, while average losses in production due to power outages and surges were estimated at 10 per cent of sales for both formal and informal firms, far higher than in any comparator country. Losses were higher (up to 20 per cent) for firms without a generator (around half)<sup>6</sup>. The main generators are hydroelectricity plants on the Shire River in the south, but they are prone to siltation and suffer periodically from low water levels. Malawi is planning to obtain additional electricity from the Southern Africa Power Pool and in 2007 a project was initiated to build a transmission line connecting Malawi's power grid to Mozambique's. However, with acute electricity shortages affecting the entire region, it is unclear how much power will be available for Malawi.

### **Transport Systems Affecting Produce Movement**

4.13 Being a landlocked country, Malawi depends on the overland movement of exports and imports, and its transport network and connections to neighbouring countries are therefore of the utmost economic importance. The shortest, cheapest trade routes are to the Mozambican ports of Nacala and Beira, but throughout the 1980s and early 1990s the Mozambican civil war disrupted these routes, forcing most exports and imports to be routed through Tanzania and South Africa. The end of the civil war has seen the reopening of these routes but the volume of freight being rerouted has been lower than expected as rehabilitation work is not yet complete. The need to transport goods long distances adds considerably to business costs in Malawi<sup>7</sup>.

4.14 The two main airports are Lilongwe International and Chileka International in Blantyre both of which are fairly small. In 2007 plans were announced to upgrade the airports to international standards but further details have not been forthcoming. There is currently only one direct flight from Europe once a week – flights are generally routed through either Johannesburg or Nairobi. There are a number of regional flights between Malawi and the rest of Southern Africa operated mainly by Air Malawi and South African Airways.

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<sup>6</sup> World Bank Country Assistance Strategy, 2007.

<sup>7</sup> EIU 2008

4.15 The government has recognized that the inadequacy of the country's current transportation infrastructure results in high costs of production, with transportation representing about 55% of costs, compared to 17% in other less-developed countries<sup>8</sup>. In 1995, there were 15,000 km of roads of which around 3,000 km were paved. There has been no expansion of the road network since, while existing roads have deteriorated considerably. With the current road density standing at 161km per 1,000km<sup>2</sup>, Malawi is ranked 16th in Sub-Saharan Africa<sup>9</sup>. Government spending on transport and communications in Malawi has only recently started to improve, following a decline in the late 1990s (Figure 1). Under the MGDS for 2006-11, GOM is planning to spend Kw 7.6 billion to improve the road network, focusing on routine and periodic maintenance, rehabilitation and upgrading of the road network, replacement of timber decked bridges, etc. Although this is not likely to improve the road density, the road condition is likely to improve significantly, with a target of 71% of the road network being in good condition, 18% in fair condition, and only 11% in poor condition.

4.16 The results from a cross-country analysis show that government spending on broad infrastructure development contributes significantly to agricultural growth. A 1% increase in government spending on transport and communications is associated with a 0.01-0.14% increase in agricultural GDP growth (Benin et al., 2007). Investments in rural feeder roads, in particular, can have large poverty reduction effects per unit of investment, as Fan et al. (2004) show in the case of Uganda, where the marginal returns to public spending on feeder roads on agriculture output and poverty reduction is three to four times larger than the return to public spending on murrum and tarmac roads. This positive effect of public infrastructure spending on agricultural growth is consistent with that observed in previous studies. In fact, investment in infrastructure, especially road development, is often ranked among the top two public spending sources of overall growth and poverty reduction<sup>10</sup> IFPRI studies in Ethiopia, Ghana, Uganda, and Zambia emphasize the importance of rural roads for increasing smallholder access to agricultural inputs and product markets. Roads enable farmers to participate in higher value-added market chains, which in turn significantly contributes to poverty reduction<sup>11</sup>.

## **Rural Finance**

4.17 Malawi's financial sector is small. The Reserve Bank of Malawi (RBM) is the central bank and there are five licensed commercial operations dominated by the National Bank of Malawi and Stanbic Bank. Indebank, formed in 1972 with foreign and local participation, provides medium and long term credit. A subsidiary of Indebank, the Investment and Development Fund finances small and medium enterprises. High interest rates have been a major deterrent to private sector borrowing, but a recent decline in government borrowing is driving greater competition in banking, particularly to attract more business from the private sector.

4.18 In the input market, access to agricultural finance is limited among smallholder farmers, particularly since the collapse of the smallholder credit scheme within the coordinated structure of ADMARC. Commercial banks and microfinance institutions consider lending to the agricultural sector as a risky investment, preferring to lend to non-farm sectors. The absence of contract farming and farmer organizations tends to maintain a situation where smallholder farmers are experiencing great difficulties to access to input credit. For instance, in the tea sector, smallholder farmers are inter-linked with commercial tea estates in an input-market relationship without the problem of side selling. In the coffee sector, smallholder farmers, through their cooperative, manage savings and credit scheme that is facilitating access to inputs. In sugar, interlinking smallholder farmers with the buyers is facilitated by

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<sup>8</sup> GoM, 2006

<sup>9</sup> IRF, 2007

<sup>10</sup> Fan et al. 2000; Fan and Zhang 2004; Moguees et al. 2007

<sup>11</sup> Thurlow and Wobst 2004; Diao and Nin-Pratt 2005

the availability of a single market for sugarcane. In cotton and tobacco, interlinked markets between smallholder farmers and buyers or investors are failing to emerge because of the problem of side selling which reduces incentives for the private buyers to invest in input regimes (ADP 2008-2012).

4.19 The Integrated Household Survey of 2005 found that female-headed households (FHHs), who make up almost one quarter of all households, are less likely to take loans than male-headed households (MHHs) (11% in comparison to 14%). Half of the FHH use loans for business start-up capital, 24% use loans to purchase inputs for food crops and only 13% to purchase inputs for cash crops. In contrast the use of loans in MHHs is broadly equally divided between these three uses. Women are more likely to acquire their loans through NGOs and relatives than men who are more likely to use Malawi Rural Finance Company (MRFC) and neighbours. The main reason why both women and men do not borrow money include a lack of knowledge of lenders, the fear of refusal, and the time involved in securing a loan; issues of expense, lack of collateral and aversion of debt would appear to be less important reasons<sup>12</sup>.

4.20 Traders also find it very difficult to access finance. It is estimated that two thirds of traders in Malawi cannot obtain a bank loan, only 6% own a vehicle and less than half have permanent storage facilities (GTPA estimate); this is a major constraint to their business. GTPA is planning to establish a warehouse receipts system, which is seen as a crucial means of assisting commodity traders access finance in order to grow their business. Experience from a number of countries, notably South Africa, but also Madagascar, Mali, Tanzania and Niger has demonstrated that Warehouse Receipts Systems (WRS) can be highly effective in upgrading grain value chains by facilitating product standardization, contract enforcement, in-store sales to large buyers and public procurement from stock. It also permits rapid price transmission through the supply chain, thus contributing to price stabilization and facilitates financing of farmers and traders through the participation of banks and financial institutions and cost-efficient investment in warehouses. Warehouse Receipts Systems complement the role of on-farm storage and are generally effective in reducing storage losses through improved stock management. However, efficient Warehouse Receipts Systems can be difficult to implement due to policy, governance and scale issues and require careful design with the buy-in of all key stakeholders.

### **Investment Climate**

4.21 Macroeconomic stability in a stable political and economic environment is a prerequisite for sustainable economic growth and wealth creation. In the past few years, there has been substantial progress in macroeconomic management – the results of which are reflected in better use of resources, stable exchange rates, declining inflation and declining interest rates. The current macroeconomic stability through prudent fiscal management and public sector management, transparency and accountability, and reduction in corruption is likely to provide a conducive macroeconomic environment for sustainable agricultural development. It is worth noting that growth of GDP, estimated at 2.2% in 2005, has been increasing and is projected to stabilize at 6% by 2011. The average inflation rate dropped from 16.9% in 2005 to 9.8% in 2006 and is projected to stabilize at 5% by 2011. Interest rates have been dropping as commercial banks base lending rates continue to drop from 25% in 2005 to 15% in 2007. These are, therefore, indicators of good macroeconomic management.

4.22 The creation of a strong legal system that safeguards the interest of both the nation and the individual is a fundamental factor for achieving sustainable economic growth and development. This, among others, is envisaged to create an enabling legal and regulatory framework that provides incentives for economic activities. In the agriculture sector, a strong legal and regulatory framework covering areas such as credit, property rights, patent rights and enforcement of contract farming and out growers' schemes, cooperatives and public/private partnerships would be instrumental in the development of the sector through private sector involvement.

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<sup>12</sup> IFAD, Rural Livelihoods and Economic Enhancement Programme (RLEEP) Appraisal Report

4.23 As a small, landlocked country that is dependent on import of key commodities such as oil and fertilizer, it is unlikely that Malawi will ever have sufficient domestic demand to allow it to flourish without strong ties to its neighbours and the broader region. Malawi's trade links are constrained by poor transport infrastructure and trade policy (tariff and non-tariff barriers and lack of export support services including assistance to meet phyto-sanitary requirements particularly in EU markets). Malawi needs to undertake a concerted effort to integrate with regional markets to take advantage offered by strong economic growth in nearby economies such as Mozambique and South Africa<sup>13</sup>.

4.24 The UN Conference on Trade and Development (UNCTAD) has published its World Investment Report 2007, and this shows the latest trends in foreign direct investment (FDI). Malawi performs poorly compared with its neighbours, receiving only US\$30m of FDI in 2006, considerably below the inflows of Mozambique or Zambia. Historically Malawi has experienced weak FDI inflows, most of which have been channelled into the agricultural sector. The poor economic policy environment and macroeconomic instability that characterised previous regimes, together with weak development of infrastructure, have hindered investment. This has meant that opportunities to invest in other sectors where there is huge potential, such as tourism, have not attracted much interest from foreign businesses. However, the recent improvement in the economic policy environment, together with high international prices for minerals, has sparked considerable interest in the mining industry, and plans for relatively high levels of investment into uranium and bauxite mines are at an advanced stage.

### **Services related to PHL**

#### **Research and extension**

4.25 In order to increase agricultural production, reduce production costs and protect the environment for sustainable agricultural production, Malawian farmers need to use improved technologies that are profitable under local farming and market conditions to increase yields, manage water, and apply natural resources in a more sustainable manner. A key investment area is therefore the support of technology generation and dissemination is agricultural research and development (R&D) and extension. For example, IFPRI research on Uganda confirms that investment in agricultural R&D offers the greatest potential for enhancing productivity and reducing poverty (Fan et al. 2004). Similarly, Thirtle et al. (2003) showed that for every one percent increase in yield brought about by investments in agricultural R&D, two million Africans can be lifted out of poverty. However, agricultural R&D spending in Malawi has been erratic and declining (Figure 2); this trend must be reversed. The current allocation is at the level of the African average of 0.5-0.6%, but below the 1.0% recommended by the World Bank.

4.26 There has also been erosion of extension services. The supply-driven system of training of individual farmers that used to work effectively in the 1970s has been undermined by a growing farming population, collapse of the farmer club system, deaths and retirement of extension workers, inadequate training of new workers and retraining of existing workers and declining resources allocated to the agricultural sector. A recent national survey revealed that only 13 percent of agricultural households got advice from an agricultural adviser on crop and input management (NSO, 2005). The inadequate extension services have implications on the extent to which research and technology developed can be disseminated, adopted and efficiently be used by smallholder farmers.

4.27 Chitedze Research Station is conducting research on a number of post-harvest issues including: evaluation of pesticides; monitoring of insect pests especially LGB; biological pest control including application rates and toxicity trials on botanical grain protectants, construction of metal silos and other improved storage structures, and collaborating with CYMMIT Kenya on development of

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<sup>13</sup> World Bank Country Assistance Strategy 2007

maize varieties resistant to LGB and maize weevil. Chitedze also trains extension staff, NGOs and fumigators in safe fumigation techniques. Since the advent of LGB, the focus of research has been on durables. Bvumbwe Research Station has the mandate for research on perishables, but its facilities are in poor condition and little work is being carried out.

4.28 Malawi Industrial Research and Technology Development Centre (MIRTDC) is mandated to conduct research and development of value-adding and agro-processing technologies specifically targeting the small and medium enterprise sector. However, the institute is under-resourced and its outreach and dissemination are very limited.

4.29 SARNET and CIP (International Potato Centre) conduct research on root and tuber crops, but mostly on varietal development and production issues. However, CIP is working on the introduction of low cost storage structures for seed and ware potato.

### **Training**

4.30 Farm Home Assistants (part of MoAFS's extension service) used to train women on food processing and preservation at household level. But the FHAs have been phased out and there is now a critical gap in imparting advice to women on household food processing. This gap has been filled to some extent by the activities of various NGOs, but not in a systematic way or on a country-wide basis. Bunda College and MIRTDC are both involved in the development of agro-processing and value-adding technologies and do provide training on request, but due to limited funding, dissemination and uptake are very limited.

### ***Market studies***

4.31 Organizations such as NASFAM and GTPA conduct market studies for their members including feasibility studies for new products/commodities and information on market opportunities. MACE is active in identifying market opportunities and contract offers for all farmers and traders who uses its services. CISANET has undertaken some gross margin analyses for maize, groundnuts, tobacco and cotton. However, there does not appear to be an independent market research agency that can conduct commissioned market research for individual clients.

### **Irrigation**

4.32 Irrigation is a key investment area that should be considered by government. Malawi has an irrigation potential of about 200,000 hectares, but only about 72,000 hectares is presently under irrigation. The government has recognized that irrigation and water development is key to the country's future success, due to its direct linkages with agriculture and energy. It is hoped that irrigation will contribute towards reducing overdependence on rain-fed agriculture, while proper conservation of water will also contribute towards the generation of electricity. The government's strategies under the MGDS for 2006-11 include construction and promotion of small- and medium-scale irrigation schemes to enhance food and cash crop production. To this end, the government has earmarked about 1.2% of the total budgetary resources for irrigation and water development with the plan of rehabilitating existing schemes and developing new ones, for a projected irrigated area of 87,000 hectares by 2011. Whether this allocation will be sufficient to reach the set target is uncertain.

## B. SYNTHESIS OF ANALYSES OF CONSTRAINTS/OPPORTUNITIES FOR MAIN COMMODITIES

### Choice of Main Commodities to Study

4.33 An economy-wide Computable General Equilibrium (CGE) model was developed for Malawi to define priority options for investment under the ASWAp using the various commodity scenarios in Table 2 (Benin et al., 2007).

**Table 2: Agricultural Commodities in the CGE Model**

Maize-led	Other Cereals-led	Root crop-led	Pulses-led	Horticulture-led
Maize	Rice Millet Sorghum	Cassava Sweet Potatoes Irish Potatoes	Beans, Soybeans, Pigeon peas Groundnuts	>Fruits (banana, mango, citrus, pineapple) >Vegetables (tomato, onion, garlic, shallot) >Spices (chillies, paprika) >Tree-nuts (macadamia, cashew)
Tobacco-led	Other export crop-led	Livestock-led	Fisheries-led	Forestry-led
Tobacco	Cotton Sugarcane Tea	Poultry cattle, goats, pigs	Fisheries (Capture fisheries & aquaculture)	Forestry

Source: Benin et al. (2007).

4.34 The results of the CGE model also reveal that incomes will be driven mainly by growth in tobacco, cotton and maize. These can be considered important strategic crops for the government.

4.35 Justification for ASWAp priority areas is based on the strategic objectives related to improved food security and nutrition and agricultural commercialization and market development. The ASWAp aims contribute to achieving sustainable staple food self-sufficiency and increase food stability mainly by:

- Implementing the targeted input subsidy programme for vulnerable smallholder farmers
- Promoting the efficiency of the input subsidy programme for increased maize productivity (through improved seeds; adapted fertilizer formulation, time of application; and cropping practices), but also through reduced on-farm storage losses.
- Stimulating the diversification of food production for improved nutrition at household level by increasing the productivity of other nutritious crops especially pulses (beans, soybeans, pigeon peas and groundnuts) drought resistant crops (cassava and millet) and horticultural crops (Fruits and vegetables), promoting smallholder livestock (Goats and chicken) and fish farming assets and appropriate food use.
- Supporting market-based mechanisms for risk management for increased stability of maize availability and prices at national level, especially when weather shocks arise.

4.36 The following strategies to achieve nutritional security will be employed

- Stimulating the diversification of food production based on suitability of locations by increasing productivity of high nutritive value foods such as

- legumes (beans, soy beans, pigeon peas, cow peas and groundnuts)
- vegetables (tomato, green beans, sweet peas, carrot, and cabbage)
- fruits (mango, citrus, banana, plantain, pawpaw, pineapple, avocado pear,)
- indigenous vegetables and fruits (Kamganje, Amaranthus, Masau and Masuku)
- poultry (chickens and guinea fowl for meat and eggs)
- small stock (goat for meat and milk, pigs and rabbits for meat)
- fish (aquaculture)
- root and tuber crops (cassava, sweet potato, Irish potato)
- Dietary Diversification
  - encourage dietary diversification of the staple foods and other food groups
  - facilitate processing and utilization of high nutritive value foods
- Intensifying nutrition education and consumer education
- Enhancing capacity building and institutional strengthening for effective implementation of nutrition programs

4.37 A second major thrust of the MGDS is agricultural commercialization and market development, with the medium term goal of increasing value addition to agriculture and productivity of farmers, and reorientation of smallholder sub-sector towards greater commercialization and international competitiveness. The government seeks to broaden participation of smallholders, including farmers whose households are headed by women in commercial crops, livestock and fish production by promoting contract farming (principally of tobacco, cotton and horticultural crops), out-grower schemes (e.g. sugar, tea, horticultural crops) and farmer cooperatives (such as in smallholder coffee). Most of the export crops are grown on commercial estates and expansion of smallholder participation will ensure that the benefits to agricultural growth trickle down to the poor.

4.38 To make a final selection of the commodities to be considered for post-harvest interventions, a number of criteria were identified. Most importantly, the scale and impact of PHL for each commodity was considered as well as the potential gains that could be realised from PHL interventions. It is important to consider the cost effectiveness of possible intervention in post-harvest and proposed interventions will need to be realistic and sustainable from a cost recovery point of view. Other criteria considered were<sup>14</sup>:

- Value chain has high outreach (no. of farmer households)
- The product contributes to food security and improved nutrition
- Soils, climate and other physical conditions are favourable for product
- There is a local tradition/expertise as how to grow the product
- Production trends have shown an increase over recent years
- The demands for the product in the target market is growing
- In terms of production costs and expected sales price, the product seems profitable
- Organised farmer groups are available as partners
- Organised market agents are available as partners
- Chain actors have access to inputs and other required technologies
- The product offers opportunities for value-adding

4.39 Taking into consideration the above, the following commodities were selected.

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<sup>14</sup> The criteria were adopted from IFAD's RLEEP appraisal document and were expanded by contributions provided by stakeholders during the mission launching meeting.



**Table 3. Commodities selected**

Food security crops	Export – import substitution crops	Animal products	Fish
<i>Initial assessment</i>			
<ul style="list-style-type: none"> <li>• Maize</li> <li>• Irish potato</li> <li>• Cassava</li> <li>• Groundnuts</li> <li>• Soya</li> </ul>	<ul style="list-style-type: none"> <li>• Tobacco</li> <li>• Horticultural products</li> </ul>	<ul style="list-style-type: none"> <li>• Meat</li> <li>• Dairy</li> </ul>	<ul style="list-style-type: none"> <li>• Lake catch</li> <li>• Aquaculture</li> </ul>
<i>To be assessed<sup>15</sup></i>			
<ul style="list-style-type: none"> <li>• Rice</li> <li>• Beans</li> </ul>	<ul style="list-style-type: none"> <li>• Cotton</li> <li>• Coffee</li> <li>• Tree nuts</li> <li>• Tea</li> </ul>	<ul style="list-style-type: none"> <li>• Poultry meat and eggs</li> </ul>	

4.40 Sugar was considered during the rapid assessment, but during discussions it became apparent that post-harvest losses are limited for sugar cane. Problems are mostly related to theft from the fields and during transport. Opportunities would exist to improve transport systems, particularly in packing methods, but no immediate cost effective post-harvest losses reduction activities were identified. It will therefore not be discussed in further detail below.

### Commodity 1: Maize

4.41 Maize is the most important crop in Malawi, contributing around 25% of agricultural GDP. It is the food staple for the vast majority of the population and is grown by virtually all smallholder farmers.

4.42 The weather and access to inputs are the key determinants to maize production. A crop of around 2.4m tonnes is considered necessary for national self-sufficiency, so depending on whether the annual harvest is above or below this, maize is exported or imported. Drought, exacerbated by lack of access to fertilizer, caused production to fall below self-sufficiency levels in recent year, to 1.56m tonnes in 2001/02, to 1.73m tonnes in 2003/04 and to 1.23m tonnes in 2004/05.

4.43 In contrast, good rains, together with the government's fertilizer subsidy programme, helped to boost maize production to 2.61m tonnes in 2005/06 and 3.2m tonnes in 2006/07, the largest ever maize harvest in Malawi. This surplus enabled Malawi to export maize to several neighbouring countries in 2007 including 400,000 tonnes to Zimbabwe, and also sell 65,000 tonnes to the World Food Programme.

4.44 The government's input subsidy programme looks set to continue, although it is recognised that it must be delivered more efficiently and cost effectively than at present, as its cost in the long term (more than 50% of the current total agricultural sector budget) is unlikely to be sustainable. If Malawi continues to produce annual surpluses of maize, there will be a need to improve the current handling, storage and marketing infrastructure to ensure that losses are minimised and the quality of the surplus grain is maintained.

4.45 This calls for an assessment of private (mainly GTPA) and public (ADMARC and NFRA) storage facilities in order to target investments in rehabilitation of existing or construction of new

<sup>15</sup> It is proposed that a national be hired to collect additional data and undertake further assessment of various commodities. The crops to be assessed have been identified by MoAFS.

infrastructure that can deal efficiently with the projected maize surpluses. Current estimated storage capacities of NFRA, ADMARC and GTPA are discussed in chapter 4 section A.

4.46 There is also a need to critically review maize marketing mechanisms, particularly the government's pricing policy and export restrictions. The government has established a minimum farm gate price of MK 40/kg and a minimum selling price of 50 MK/kg, which makes Malawian maize uncompetitive on the regional market and difficult to find export markets for the surplus production. The Malawi Poverty and Vulnerability Assessment notes that markets where government does not intervene, such as rice, beans and groundnuts, are operating more efficiently than the maize market. CISANET has carried out a gross margin analysis for maize production which arrived at a break-even cost of 28-30 MK/kg. This suggests that there is some scope in the minimum price being reduced to make Malawian maize more competitive on the regional market. GTPA has been lobbying the government to establish other measures that would increase the efficiency of the marketing system; these include the establishment of a warehouse receipts system (operated by the private sector), market insurance and futures contracts.

### **Farm Level**

4.47 Handling, storage and marketing practices on-farm also require attention, so that appropriate technical advice and training is disseminated to farmers. The maize surplus has resulted in larger quantities of grain being stored, often for longer periods. Furthermore, the improved maize varieties being promoted by government through the subsidy package are softer, and more susceptible to pest damage. Fumigation is a more effective pest control measure than treatment with actellic, but fumigation must be carried out by professional fumigators, and many farmers do not have access to these services. It is becoming clear that traditional handling and storage practices are in many cases no longer sufficient and there is a need for improved drying, storage and pest management at farm level.

4.48 Lack of drying facilities is a particular concern. Discussions with NFRA highlighted that a large proportion of maize marketed shortly after harvest is outside NFRA's moisture content specification (12.5%). Although NFRA has drying facilities, it prefers not to use them, as it is more cost effective to buy maize which complies with the moisture specification. This results in a lot of early season maize being rejected or remaining on the farm for a further month or longer until its moisture content has been reduced through natural drying. However, during this drying period, the grain is susceptible to infestation by insects and/or mould growth, which can result in significant post-harvest losses. There is thus an urgent need for improved drying facilities on-farm to ensure that maize can either be marketed early in the season at the correct moisture content, or stored on farm for longer periods without risk of mould growth and aflatoxin contamination. Mechanical driers are too expensive for individual farmers, but there are a variety of low-cost driers which could be affordable to farmer associations for use by their members.

4.49 The current small metal silos programme being promoted by MoAFS needs to be carefully evaluated as evidence from the field suggests that the silos which have been piloted are not being adopted by farmers. The main reasons for lack of adoption include:

- a) High cost: MK 17,000 – 65,000 (US\$ 120 – 450) depending on size from 0.5 – 1.8 MT
- b) Lack of security: it appears that in many parts of the country, farmers prefer to store grain for household use inside the house to protect from theft
- c) Poor extension support: the promotion of the silos has not been supported by strong extension advice on their usage
- d) Lack of ownership: the silos are small and intended for individual household use. However, they have been promoted for community use and this has created issues on lack of ownership

4.50 The diminishing role of ADMARC has left a void for many small farmers. Where previously ADMARC guaranteed a market to small farmers, the market has now opened up to private buyers with different standards and prices, and farmers are unsure where to sell. In this regard, there is a need for aggregation of grain at farm level so that farmers can participate more fully in the commercial market. For this purpose, professionally managed stores with larger capacity are required, with farmers organized into groups or associations for joint marketing. Capacity building in grain management, quality standards, marketing mechanisms and business skills are required to enable farmers take advantage of the new market opportunities being opened up by the private sector.

4.51 A post-harvest loss assessment survey should be undertaken to estimate where the most significant quantitative and qualitative losses occur in the maize marketing chain, and identify where interventions should be targeted to achieve greatest reductions in losses. MoAFS is about to undertake a limited loss assessment survey at farm level. This is described in more detail in section 4: ongoing and planned post-harvest activities.

### **Commodity 2: Irish Potato**

4.52 Irish potato has been grown in Malawi for many years but has been characterised by low yields and low quality, even with application of fertilizer, due to poor varieties and diseased seed. Yield averages 10 MT/Ha while good quality seed can yield 20-30 MT/Ha. Poor quality seed produces potato with a shorter storage life which is prone to rots and other infections during storage. As a result, potatoes are being imported from South Africa to meet the demand for quality potatoes by industrial processors and the catering sector.

4.53 The International Potato Centre (CIP) started a potato improvement programme in Southern Africa in 2006, covering Malawi, Zambia, Mozambique and Angola. It focuses on improved planting material, and on farmers following good husbandry practices. On farm trials are also underway for evaluation of new varieties. In Malawi, Irish potato is seen as a high-value crop with growing national and regional demand for potato crisps and French fries for the restaurant and hotel sector. Universal Industries (see paragraph 4.10) needs 2,000 MT potatoes per annum for its potato crisp operation but currently can only procure 50 per cent of its needs despite establishing contract agreements with a number of smallholder farmers and supplying them with inputs. Irish potato can provide a good income to smallholder farmers; CIP estimates that the return on investment can be as much as US\$ 480 on an area of 1,000 m<sup>2</sup> within 4 months. Farmers are responding to this market opportunity; production has increased from 404,000 MT in 2005 to 673,000 MT in 2008; an increase of 66 per cent, and over the past decade, land area for Irish potato has grown from 10,000 to 40,000 Ha. Despite these increases, production remains below demand.

4.54 Storage of both seed and ware potato has been a problem for many farmers. Traditional storage methods (tubers kept on the floor inside houses) resulted in a short storage life and poor quality planting material. CIP started promoting a Low-cost Diffuse Light Potato Storage System in 2007 and the results so far have been promising. A number of farmers have reported an increase in storage period from two to three months with the traditional method to up to eight months using the new store. The quality of the seed potato is also improved and resulted in higher productivity. CIP is liaising with extension staff and NGOs (Concern Universal) to train farmers and build capacity in potato storage and there are also plans for the establishment of a tissue culture laboratory and seed quality control laboratory.

### **Commodity 3: Cassava**

4.55 Cassava has been promoted by government in recent years as a diversification strategy to maize because it is drought tolerant, flexible over planting and harvesting times, and provides a high

level of dietary calories. The majority of cassava is for household consumption but increasing quantities (estimated 30%) of fresh roots are marketed in urban areas as a cheaper alternative to wheat bread. Cassava production has expanded rapidly over the past decade and national production in 2008 was estimated at about 3.5 million tonnes. This production increase is due to an increase in cultivated area but also due to the adoption of higher yielding, disease resistant varieties promoted by IITA/SARRNET. Apart from its important food security role, several donor funded projects have attempted over the past few years to turn cassava from a purely subsistence to a commercial crop and expand its use to food and non-food industries as a substitute for imported wheat flour or industrial starch. The most recent of these are the on-going “Enhancing cassava-based farming systems” project managed by FAO and funded by the Italian government and the C:AVA (Cassava: adding value for Africa) project managed by the Natural Resources Institute and funded by the Gates Foundation. The All ACP Agricultural Commodities Programme is also providing support to cassava commercialization from 2010.

4.56 However, despite donor and NGO support, cassava processing for commercial use remains limited and on a small scale. Some large scale industries, notably Universal, have tried to purchase cassava flour but have been thwarted by a lack of regular supply and inconsistent quality. The main problems constraining commercialization have been poor market linkages and lack of market information between producers, primary processors and industrial users, poor quality of cassava flour and shortage of raw material. Initially, farmer groups were encouraged to add value by taking on the role of primary processing themselves, but this model has not been successful because farmers do not have the business or technical skills to run a processing enterprise. Projects are now trying to engage small-scale entrepreneurs who will process cassava as a full time business, while establishing linkages with farmers to supply sufficient quantities of raw material to the processors.

4.57 The key issues that need to be addressed if cassava is to be commercialized include establishment of nurseries for improved planting material and increasing production to meet the needs of the industrial sector (estimated at 2,000m tonnes dried cassava per annum). Linkages need to be established between producers, processors and industries using mechanisms such as contract farming and supply contracts. It is also evident that there is a lack of entrepreneurship skills by farmers associations and small scale processors and training in business management, financial planning and marketing is required to address this gap. Physical post-harvest losses of cassava are not significant as the root is generally harvested only when required for home consumption or sale in local markets. However, there is little value-addition to the fresh root and the processing that does take place results in a product of poor quality which is not attractive to commercial buyers. There is significant scope for improving the processing of cassava to enhance its quality and value and create new market opportunities.

4.58 The other key constraint is poor product quality. Industry demands cassava flour of consistent quality and processors are unable to meet the required standard. The facilities and equipment of the small-scale cassava processors are inadequate and this compromises product quality. Processors need training in improved processing technology, quality and safety issues, and will need to adopt improved processing equipment and upgrade their facilities if they are to meet the standard demanded by industry. Cassava processing enterprises need improved equipment (graters, presses and driers) for production of high quality cassava flour.

4.59 The ASWAp doesn't specify priorities for the cassava industry, other than promoting cassava as a food security crop. At present, most of the effort has been directed towards helping the producer without recognising that increased production levels require organized markets and processing facilities. For commercialization to succeed, government needs to establish an industry wide forum to develop an overall strategic plan, raise the profile of the sector, and delegate responsibility for developing the different links in the value chain.

## Commodity 4: Groundnuts

4.60 Malawi was a major exporter of groundnuts to Europe in the 1960s and 70s, with exports mainly done by parastatals. However, the market collapsed in the 1980s due to aflatoxin problems and increasing consumer awareness of food safety issues. NASFAM (see paragraph 3.22) started promoting groundnuts in 2000 and has worked with ICRISAT to improve access to certified seed and resolve the aflatoxin problem. Farmers have been trained in how to minimise the risk of aflatoxin contamination through good handling and storage practices. A traceability system has also been introduced, enabling any quality problem to be traced directly back to the farmer. A number of technical innovations have been introduced to improve nut quality; mechanical shellers shell nuts centrally instead of farmers shelling by hand, and a SOTEX plant sorts nuts according to colour and size and rejects discoloured nuts (which are more likely to be contaminated with aflatoxin). Losses during processing depend on the quality of the nut. Currently, around 20 per cent nuts are rejected during sorting. However, discoloured nuts are pressed for oil (as aflatoxins do not enter the oil) thus losses are minimized. NASFAM also has its own laboratory where it tests for aflatoxins before sending samples to SGS for third party verification. Currently, NASFAM needs a blancher, vacuum packer and roaster for the development of the groundnut chain.

4.61 Some of its producer associations have been Fair-Trade certified and part of the production is being sold on the European Fair Trade market. Farmers have responded positively to these new market opportunities, and groundnut production has increased substantially; from 141,000 MT in 2005 to 243,000 MT in 2008.

4.62 Despite the success in developing the groundnut value chain, a number of problems still require resolution. In 2007, NASFAM exported 25 containers of nuts (total 450 MT), but in 2008, only 4 containers (72 MT) were exported due to aflatoxin problems. Farmers clearly need more training and sensitization on the importance of quality assurance and following good production and post-harvest practices. The long transit time (one month) for the nuts to reach Europe also compromises quality. Blanching and vacuum packaging are the best way of stabilizing the nuts, extending shelf-life and maintaining quality during transportation. NASFAM has plans to obtain this equipment, but its cost (US\$ 140,000) means that additional funds will have to be found, probably through donor support.

4.63 Other challenges lie in identifying new markets. The Fair Trade market is relatively small, and not all NASFAM's production can be marketed through this channel. Nuts are sold on the local market, packed in 1 kg bags, and some are sub-contracted for roasting and salting as NASFAM doesn't have its own roaster. However, the local market is too small to absorb the country's total groundnut crop, and regional market opportunities will need to be identified for nuts, oil and groundnut paste.

A number of important lessons have been learnt in the development of the groundnut value chain. Furthermore, the issues are generic and have broader application to the development of other commodity chains.

4.64

- Know your customer and the consumption pattern of products
- Focus on farmers who are serious
- Establish a strong mechanism to ensure that farmers pay back any loans or inputs they are provided in advance and are not involved in side marketing
- Define structures and areas of responsibility
- Link with research institutions to address issues of productivity and quality
- Build networks with other players such as donors and the private sector
- Address the issue of inputs
- Develop knowledge on international standards. Work with Malawi Bureau of Standards to get international accreditation.

## Commodity 5: Soya

4.65 Soya bean is an important and versatile grain legume with a high protein content and excellent nutritional profile. It can be utilised in soya milk, tofu and poultry feed, is a good source of cooking oil, and is also a key ingredient in enriched child-feeding formulations and high protein biscuits. Demand for soya beans is high both domestically and internationally. Malawi's soil is conducive to soya bean cultivation and farmers have responded favourably to market demand; soya production has increased by 50 per cent over the past three years to around 60,000 MT. Soya is resistant to pest attack and is a crop that stores well with little post-harvest damage. However, most of the soya is exported raw and little is processed for food domestically. A major reason for the lack of value-addition is that soya is very difficult to process at household level; it has a long cooking time and contains various anti-nutritional inhibitors which must be neutralised before consumption. Concern Universal has embarked on an intensive campaign to promote soya, and train women on processing and utilization at household level.

4.66 Malawi imports crude oil for refining into cooking oil and there is high demand for cooking oil both locally as well as in the SADC/COMESA region<sup>16</sup>. Opportunities therefore exist in investment in oil extraction and processing of soya milk, high protein flour and other secondary products. Though the government has an interest in promoting soya production, the ASWAp does not mention soya other than in the context of household food budgeting and improving household nutrition education. No production or marketing interventions are foreseen in the ASWAp.

## Commodity 6: Tobacco

4.67 Tobacco is Malawi's main export and is an important cash crop for both smallholder farmers and commercial estates. It contributes around 15% to agricultural GDP and generates 55% of export earnings. Together with maize, it is regarded as the driving force of the agricultural economy. Smallholders mainly produce rain-fed burley tobacco, which is sold at auction, whereas large estates mainly produce flue-cured tobacco according to contracts with fixed prices agreed with buyers. However, as flue-cured tobacco earns a higher price on the market, and with the collapse of flue-cured tobacco in Zimbabwe, many Malawian farmers have begun to switch to producing flue-cured rather than burley tobacco. Malawi's tobacco industry is dependent on weather conditions, which affect the volume and quality of the tobacco harvest, and on trends in international demand which influence auction prices. Tobacco sales have fluctuated in recent years between a peak of 180 million kg in 2004 when the high prices of the previous season (US\$1.86/kg) encouraged farmers to grow more tobacco; to a low of 110 million kg in 2007, reflecting the low prices in 2006 (US\$0.98/kg). However, high prices returned in 2007 at US\$1.90/kg, which had a positive effect on the 2008 harvest.

4.68 The Tobacco Association of Malawi (TAMA) estimates that between 80 - 90 per cent of tobacco is being grown by small-scale farmers. It identifies the following stages during which post-harvest losses occur for small to medium scale tobacco farmers:

- Curing – poor/inadequate curing facilities
- Handling – conditioning, grading
- Storage – inadequate space
- Transportation
- Selling to vendors
- Long period before sale of produce
- Long distance to selling points

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<sup>16</sup> Malawi Confederation of Chambers of Commerce and Industry (MCCCI)

4.69 The most significant losses occur during the three initial stages of curing, handling and storage. Curing sheds are poorly constructed – farmers have to prepare new sheds each year and often leave it too late. Preparation of annual sheds also leads to deforestation. To mitigate this, farmers are supposed to put 10 per cent of their tobacco land under afforestation. However, this policy is not enforced. Big farmers, by contrast, have permanent structures. Tobacco leaves are frequently over or under conditioned, leading to mould growth or breakage. There is often inadequate space for storage; leaves are heaped too high and over-compressed. The Agricultural Research and Extension Trust (ARET) is the extension and research arm of TAMA. It is achieving some promising results in promoting of “live” sheds which don’t need replacing each year, and is also encouraging farmers to use plastic sheeting instead of the traditional thatch roof. However, ARET lacks capacity and outreach; there are plans to strengthen its capacity by closer linkages with extension staff from MoAFS. However, as the MoAFS extension system is already understaffed and overburdened, it is doubtful whether this measure will result in any practical improvement.

4.70 The losses incurred due to the long time period before sale and the long physical distances to selling points could be mitigated by the development of rural markets. TAMA has piloted several rural markets where farmers can bulk and sell their tobacco close to the production sites; these have shown a significant improvement in tobacco quality. However, efforts to establish rural markets have met with resistance from the tobacco auctions which see this development as direct competition to their operations.

4.71 Government sets a minimum tobacco price based on a cost of production analysis conducted by ARET each season. A 15% mark-up is added to this figure which then becomes the minimum price. However, buyers demand quality tobacco, and to ensure a price incentive for producers to meet buyers’ standards and improve quality, over 150 quality grades for tobacco have been established, each with its corresponding price. If tobacco doesn’t meet the buyer’s standard, it will either be rejected, or purchased below the minimum price for onward sale in non-discerning markets with low quality requirements.

### **Commodity 7: Horticultural Products**

4.72 Information on the production and marketing of fruits and vegetables is not easily available as much of it is produced and marketed informally. Discussions with various stakeholders indicate that fruits and vegetables are produced in abundance, but the low quality of produce exacerbated by weak market linkages and poor infrastructure creates substantial wastage and post-harvest loss, and farmers do not realise the full economic potential from their production.

4.73 The unorganized nature of the local horticultural sector is highlighted by the quantities of fruits and vegetables imported from South Africa for sale in Malawi’s supermarkets. South African produce is of relatively good quality, clean, well packaged and presented, and, importantly for supermarkets, is delivered according to an agreed contract in terms of time schedule, quantity and quality. There is a significant market opportunity for local produce to compete with South African imports if quality and reliability of supply can be improved. Farmers need to organize into groups or associations and be sensitised on the importance of quality and post-harvest handling. Facilities such as packing sheds, potable water, knives and shredders (for prepared pre-packed vegetables), packaging materials and labels will be required for improving quality and adding value to produce. For longer term investment, there is a need to improve the logistics in the distribution chain by upgrading rural market infrastructure and feeder roads. Refrigerated market structures are not considered feasible due to erratic electricity supply and high cost, but substantial improvement could be made by supplying potable water, sanitary facilities and concrete surfaces with roofing where produce can be kept clean and protected from the sun. Refrigerated vans for transporting produce over long distances to large urban buyers may

also be a practical consideration. In addition to the fresh market, there are also opportunities for fruit and vegetable drying, preservation into jams, juices and chutneys, and for larger investors, canning.

4.74 Critically, market linkages with buyers must be strengthened and enforced through contracts. Contract agreements can initially be facilitated through NGOs and donor supported projects working in the horticultural sector. One idea has been to set up a wholesale market in urban areas where farmer groups sell quality fresh produce to supermarkets, restaurants and hotels, but this has so far not been implemented. Varietal improvement and access to good quality seed is also important; linkages need to be established with research institutes that can provide improved seed and private sector seed multipliers identified.

4.75 Substantial capacity building is required to make Malawi's horticultural sector competitive against South African imports. However, there are examples of success stories; the Ngolowindo Horticultural Cooperative Society near Salima is marketing value-added products to a number of buyers in Lilongwe. Its operations are discussed in more detail in Section 4: on-going post-harvest activities.

### **Commodity 8: Meat and animal by-products**

4.76 The livestock sector in Malawi has particular challenges and this is partially a reflection of the lack of emphasis in the agricultural strategies and policies towards the sector. Budgetary allocations to the livestock sector have been insufficient. Another factor is the poor performance of the cropping sector – as the demands for cropping land increase, so farmers move more into traditional grazing areas and cropping displaces livestock.

4.77 Since the early 90's, under influence of the SAPs and the policy environment at that time, the extension services available for the livestock sector have been seriously eroded. Braindrain and limited training of animal extension workers and veterinarians has left the government particularly weak in providing services to this sub sector. A few years ago, the government transferred ownership of dip tanks throughout the country to the communities. These dip tanks previously were the centres for animal services to be offered to the farmers. This is where extension workers would meet with farmers. Often, nearby these dip tanks, slaughter slabs could be found where animals would be slaughtered and government inspection would take place. Now, with the transfer of these dip tanks and the eroded government extension services, many farmers are no longer receiving support and the necessary services.

4.78 Malawi is supporting the training of Community Based Animal Health Workers (CBAHWs). The Small Scale Livestock Promotion Program (SSLPP), a local NGO, has been partnering with the department of Animal health and Livestock Development in the training of CBAHWs and the development of operating manuals. The CBAHWs are not veterinarians, but are able to provide services such as AI and vaccinations.

4.79 Malawi has a number of large commercial beef feedlots that supply the local supermarkets. To meet total meat requirements Malawi relies on imports. There is no (official) meat export. The production volumes of these feedlots have increased over the years and represent a significant percentage of the total cattle production in the country. The products are generally of good quality and are sold in the urban markets. Their slaughtering facilities are privately owned and in general have adequate cold storage and other facilities and mostly have their own transportation.

4.80 In addition to home slaughtering practice, community level slaughtering slabs and local abattoirs are used. The local abattoirs are generally privatized, but most facilities are decrepit and lack cold storage facilities. Poor butchering practices also contribute to meat losses. Meat inspection by the government is largely absent. All factors mentioned above contribute to overall poor meat quality.



4.81 An important factor contributing to post-harvest losses for animal products is the absence of organised markets for both meat and animal by products. Both quantitative and value losses occur because of this. In Malawi markets for animal by-products, such as hides and skins and manure, are largely absent. Hides and skins that are usually utilized in an unprofessional manner as tanneries are largely absent. Manure is also underutilized and the potential for using manure for crop fertilizer are untapped. Especially for dairy cattle zero-grazing is practiced, which means that collecting manure is feasible. Research efforts could look into opportunities for use of manure for alternative usage such as biogas and mosquito repellent.

4.82 Losses for meat products occur at different stages. Cold chain management needs to be improved for meat products, including cold storage facilities at slaughter houses, collection centres, markets and during transport. Furthermore, there is an urgent need to enforce standards in processing, packaging and haulage of livestock products. This will include training of producers and processors on HACCP and GAP/GMP.

4.83 Good rural infrastructure and transport systems are essential for the livestock sector. Losses in livestock body weight, although not strictly considered post production losses, are effectively value losses for the farmers. These occur when transporting takes too much time. This relates to transport to either the market place or the slaughtering facility. Good infrastructure and availability of cooling vans (potentially through PPPs or private sector contracting) are also needed when targeting urban market centres for marketing of meat products. Careful loading and off-loading, speedy movement and night transport of meat must also be given attention.

4.84 Efforts need to be made to improve slaughtering facilities, in terms of providing cold storage rooms, adequate slaughtering equipment and general upgrading of the structures. Also meat inspection services should be strengthened. Proper packaging materials should be used and hygienic meat handling practices should be promoted and enforced. Upgrading of marketplace infrastructure is required as well, especially in terms of provision of cold storage facilities. Also training needs to be conducted on hygiene and quality standards and good butchering practices. In addition support through appropriate credit lines need to be availed to upgrade livestock housing and processing units. At farmer level there is often limited knowledge of preservation of meat, which contributes to losses.

### **Commodity 9: Dairy<sup>17</sup>**

4.85 The ASWAp priority is on food security with the Dairy Industry aim to increase milk production by importing dairy cattle, heifer multiplication, increased feed/fodder, and promotion of mini-dairy processing. Livestock mortality will be reduced by providing vaccination services, intensifying disease control, and better technical services.

4.86 Like meat, dairy products are also facing specific marketing challenges. The cold chain for dairy products is extremely sensitive to electricity interruptions, which is a cause for some of the losses in the sector. The dominant reason for marketing difficulties for domestic dairy products is related to the significant subsidies imports of dairy products for among others Netherlands, Belgium, Ireland, South Africa and Zimbabwe. 60% of all consumed dairy products are imported, most of which is in powder form. Dairiboard, has been importing cheaper, sterilized milk, which is of lower quality and fat content than the locally produced milk. Recently, the government increased import levies on dairy products in an attempt to support the domestic dairy sector (see section below for more details on dairy products). Parallel to increasing the import levies, domestic productivity, both in terms of quantity and quality,

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<sup>17</sup> Most information in this section is obtained from the European Union: Value Chain Analysis Report – Dairy Industry

should be improved. Introduction of improved breeds and improved breeding programmes could be one way of achieving this<sup>18</sup>.

4.87 Farmers are formed into milk bulking groups (MBG's) with elected committees. The milk is delivered daily to MGBs where it is kept cooled until daily collection by the milk processors meaning the milk can be a day old at collection. Tests are made of the delivered milk for adulteration and acidity for sourness with no testing for bacterial count, or fat percentage. Payment is made monthly to farmers. The MGB charges 50 tambala per litre for running costs. Each MGB has an agreement with a milk processor. Milk collection is at times erratic.

4.88 The Dairy Processors Association Limited (DAPL) represents the six main processors concentrated around Blantyre, Lilongwe and Mzuzu. The Southern Region Shire Highlands Milk Producers Association (SHMPA) has 22 MGBs, supplying 25,000 litres of milk daily. Estimates show that 80% of the milk is marketed in Southern Region with 15% in Central Region and 5% in North. 18 MGBs form the Central Region Milk Producers Associations (CREMPA). In Mzuzu the Mpoto Dairy Farmers has 9 MGBs. There are other potential areas, but they are isolated from urban areas. Dairibord markets 70%, Suncrest 15%, Lilongwe Dairy 10% and Northern Dairies 5%. Processing capacity is under-utilised at 40% capacity. Dairibord does produce butter, cheese and yoghurts with two other producers making yogurts but in the supermarkets it is imported milk products that dominate. Increased competition for the limited milk supplies has pushed the price paid by Southern milk processors up to 65 Kwacha per litre. Because there is little competition in the Northern Region, Northern Dairies pays only 40 Kwacha per litre. Vendors sell untreated milk at 50 Kwacha per litre. Milk processors sell to retail outlets at 159 Kwacha per litre. In Lilongwe supermarkets the December price was around 200 Kwacha per litre for local UHT milk and 360 per litre for imported UHT milk from Zambia (Parmalat).

4.89 Dairy processors find it hard to source capital and specialised expertise. Support to encourage large dairy farms would be a major boost. The Government has a major role and the first step in achieving this is to hold a Dairy stakeholder strategic planning meeting. The European Union, Oxfam, World Vision and USAID are supporting dairy development. There is no support for the Government veterinary service.

4.90 The industry's strength is that the low cost/input system is resistant to drought conditions, provides a regular income. Expansion to new northern areas based upon a strong Dairy Farmer Associations and expanding number of processors can meet the potential unsatisfied demand for pasteurised milk. The weaknesses are the present system does not make full advantage of crossbred cows, causes high calf mortality, long calving intervals, slow herd growth, and low milk yields with a high bacteriological content with a feeding level of concentrates. AI services are erratic with weak farmer training in farm business management. There is no milk recording scheme to determine quality cows and establish a national breeding scheme. No coordination between Aid Donors and NGOs on where best to concentrate dairy development activities, with a poor rural road system low level of rural electrification and with no effort to identify new MGBs in under-exploited areas.

4.91 There is an unmet demand for pasteurised milk with strong competition coming from importers. Processors need to improve marketing techniques, improve milk quality and for MBS to set higher quality standards. The opportunities include the chance to turn small low input/output businesses

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<sup>18</sup> Currently, under SADC agreements, live animals imports into Malawi are restricted. The civil society is lobbying the government to open up the discussion within SADC to have this rule revised. Introduction of improved breeds will require adequate support availability of veterinary inputs for the farmers. At this point it seems questionable whether the government has the capacity, to provide the necessary services to the farmers through extension and the veterinary department. Introduction of improved breeds through NGOs, acting as service providers in collaboration with MoAFS, could be a more feasible option. Opportunities for setting up PPP initiatives for breeding stations could be explored. This includes PPPs for the actual breeding stations as well as for the supply of the required inputs such as liquid nitrogen.

into larger profitable businesses in suitable areas of the country using new MGBs and their farmer associations as one stop input and production suppliers and extension advice centres. With more aggressive marketing, smaller pack sizes and the use of vendors to increase the amount of milk consumed supported by funding for small shop owners to purchase refrigerators; funding to assist processors install more UHT machinery to produce more value added milk products. Unless the volume of milk processed increases and its quality improves and UHT processing machinery installed then the threat is neighbouring countries may capture the Malawian market.

4.92 Recommendations related to dairy handling and marketing include:

- Encourage the payment of farmers on the quality of their milk based upon bacteria count and fat content. This can be implemented using a simple measuring system used in other developing countries. For Dairy processors to start paying a higher dry season milk price to farmers so as to encourage dairy cow feeding to maintain the off-season levels of milk production. Processors should also be encouraged to pay bonuses to MGBs for any increase in the amount of milk sold to processors rather than vendors.
- Encourage Dairy Farmer Associations to become supply centres for dairy inputs, veterinary and livestock extension advice with the Department of Animal Health and Livestock Development (DAHLD) and NGOs using the MGBs as centres for their extension and veterinary staff.
- Reduce the number of government departments required to license and test milk by processors and improve the business environment for small businesses.
- Persuade DPAL to take on a more active role in identifying marketing opportunities, test methods for increasing milk sales in low cost housing areas, and promote joint company training programmes for staff in marketing, business management and milk hygiene standards using Aid Donor funds until viability has been proven and trust established.
- Assist the government to modernise the Malawi Bureau of Standards to international standards of certification, and to establish commercially owned food testing laboratories. Sponsor organisations/institutions to carry out ISO/HACCP registration.

### **Commodity 10: Fish**

4.93 Fish from Lake Malawi is a major source of the population's protein requirement and the industry provides employment for about 200,000 people. However, declining fish stocks meant that during the 1980s fish production fell by almost 25% and exports fell from 140,000 tonnes in the mid 1980s to just 3 tonnes in 1998, the last year in which fish was exported. The government is considering closing the lake at certain times of year to conserve fish stocks and other policies are designed to protect breeding areas and restriction on the size and gauge of the fishing nets. However, these measures have not been effective due to poor implementation. Lake Malawi, which covers 20% of the country, is a vital resource. The annual fish catch from the lake provides 75% of the animal protein consumed by the population. However, the lake has been over-fished and fish production has fallen since the 1980s. Production was 67.000MT in 2008, up from 65.000MT in 2007 and 45.000MT in 2006<sup>19</sup>. Fish farming represents only about 1 or 2% of all fish production in Malawi. The reason for this production increase is thought to be related to natural production cycles and the use of more innovative fishing methods. The fishing industry in Malawi employs an estimated 200,000 people.

4.94 Maldeco Fisheries is the largest commercial fishing and processing company in Malawi and fishes using three stern trawlers. Maldeco's annual catch amounts to over 70% of the total commercial catch and about 7% of the total Lake Malawi catch. Maldeco's major catches are the haplochromines, with ndunduma (*diplotaxodon* spp) contributing 60 - 70% of the total annual catch. Tilapiines catches

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<sup>19</sup> Estimates provided by the Ministry of Fisheries during discussions

have been falling and are now at their lowest point ever. Chambo (*Oreochromis karongae*), once the most popular fish in the lake for example and famed in cuisine, is presently not targeted by Maldeco Fisheries at all. Maldeco operates a fish processing plant which has freezing and cold storage facilities and three ice plants. There is also a smoking kiln for chambo and kampango (*Bagrus meridionalis*) fillets. Maldeco's main product is fresh fish representing over 90% of sales with only 10% processed including smoked, frozen gutted and frozen fillets. Sales of dried fish are declining rapidly.

4.95 Local artisanal fishermen use traditional boats, generally without taking ice. This means that fishing is mostly done close to the shores, which has led to over-fishing in these parts of the lake. They make use of primitive local landing sites, where proper facilities are largely absent. This is where many of the quality losses occur. Substantial losses occur during the drying of especially small fish in the rainy season. There is a need to assess the actual impact of post-harvest losses for fish, both in terms of quantity and quality.

4.96 The responsibility for fisheries is handled by the Department of Fisheries is under Ministry of Lands, Natural Resources and the Environment. The Department of Fisheries is engaged in several projects to increase fish production and sustain the fishing industry. Supported through the Lake Malawi Artisanal Fisheries Development Project, the government has provided processing and storage facilities for local landing sites. In addition some chill rooms and storage facilities have been constructed at inland markets. Efforts have also been made to train extension officers on fish marketing and handling in collaboration with the Malawi College of Fisheries (MCF) located in Mpwepwe in Mangochi.

4.97 A critical factor affecting the fisheries sector is the absence of quality standards. Recently the EU supported a joint Malawi Bureau of Standard (MBS) and Department of Fisheries scoping mission looking at the development of fish quality standards. A complicating factor is that MBS can only inspect, but has no legal authority to enforce quality standards. Therefore, in addition to developing fish quality standards, a competent authority will need to be identified or set up to administer the quality control. The development of the fish standards coincides with a number of other government initiatives, notably the revision of the Fish Act and the development of a Food Law by the Ministry of Industry and Trade. The issue of fish quality standards need to be harmonised and incorporated in all relevant policies and strategies.

## **5. ONGOING AND PLANNED POST-HARVEST ACTIVITIES/PROJECTS**

### **A. ONGOING AND PLANNED ACTIVITIES OF PUBLIC INSTITUTIONS**

#### **Input Subsidy Programme**

5.1 In the wake of extreme drought and low agricultural productivity in early 2005, the government reintroduced a broader agricultural input subsidy program during the 2005/06 cropping season. The Government's current strategy for the development of the agricultural sector seems to focus primarily on production increase for food self-sufficiency. Looking at the potential of reducing PHL (in combination with increased productivity) could be a cost-efficient approach to improving domestic food security. Under the agricultural input subsidy program, approximately 130,000 t of fertilizer was distributed through a coupon based distribution program to more than 1.3 million farm households. The following year, approximately 1.5 million farmers received coupons for the purchase of 150,000 t of fertilizer and two million farmers received coupons for free maize seed. In 2007/08 more than 1.7 million farmers are estimated to have received coupons for 170,000 t of fertilizer and almost 3 million farmers are expected to have received coupons redeemable for seed. Over 50% of the budget of the Ministry of Agriculture and Food Security is allocated to pay these costs. Donor funds are paying some administration costs and much of the costs of the seed subsidy.

5.2 In combination with favourable rains, this program has contributed to sharp increases in maize harvests in 2006 and 2007. During the recent harvests, the country produced significant maize surpluses. This has allowed Malawi to start exporting 400,000 t of grain to Zimbabwe and 80,000 t to Swaziland and Lesotho<sup>20</sup>.

#### **Maize Post-harvest Loss Assessment**

5.3 A maize post-harvest loss assessment survey was to be conducted throughout the 2009 storage season. The methodology, based on a rapid visual assessment technique, was developed with assistance from FAO and intended to add quantitative and qualitative data to the formal survey questionnaire developed by MoAFS. However, due to a shortfall in funding, the extension staff and enumerators who are to carry out the survey are only now being trained. It is hoped that the assessment will take place shortly, even though the start of the survey has been delayed. This survey will however focus only on farm level losses. There is a need to conduct a more comprehensive survey to examine quantitative and particularly qualitative losses that occur in the rest of the maize marketing chain. MoAFS agreed that a survey looking at the entire maize post-harvest chain was desirable, but due to funding constraints, the focus was restricted to post-harvest operations at farm level. However, it is recommended that funds should be allocated for a comprehensive loss assessment survey covering traders, transporters and processors as there is little data available on this sector of the chain.

#### **National Food Reserve Agency (NFRA)**

5.4 NFRA is a parastatal which was established in 2000 to take over the management of the national Strategic Grain Reserve (SGR) from ADMARC. It only handles maize, and operates a grain-out grain-in system to ensure its stock is maintained at the level dictated by government. The stock level

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<sup>20</sup> [www.worldbank.org](http://www.worldbank.org)

is determined by the Malawi Vulnerability Assessment Committee (MVAC) which identifies food shortages and makes its recommendations to government. Current required stock level is 120,000 MT.

5.5 NFRA experiences very little loss (estimated 0.5% from cleaning of maize) due to their procurement procedure. From 2003, quality specifications were instituted for all incoming maize<sup>21</sup>. Maize not meeting these specifications is rejected. All incoming grain is fumigated and re-fumigated after 3 – 4 months in stock. These management practices account for the very low levels of loss, as effectively, all the risk is passed onto the farmer and trader.

5.6 NFRA has drying facilities but prefers farmers to do the drying so as not to incur extra costs. It buys from traders and organized farmers but not from individuals. It acknowledges that drying maize adequately is a challenge for farmers early in the season, while drier maize purchased later in the season often encounters problems with insect infestation and mould growth. The new improved varieties are also a challenge for farmers as they are more susceptible to insect damage.

5.7 NFRA has started offering a number of services to farmers and the private sector including subsidised fumigation services, rental of warehouses and hire of the weighbridge.

### **Agricultural Development and Marketing Corporation (ADMARC)**

5.8 In the period before market liberalization, ADMARC had sole responsibility for purchase, storage and marketing of maize and other major commodities and also managed the national Strategic Grain Reserve. ADMARC had a country-wide network of storage and marketing centres where farmers brought their produce for sale at a price fixed by government. Since liberalization, ADMARC's role has diminished; it now has to compete against other traders and leases out some of its market and storage facilities to the private sector. Furthermore, due to shortage of funds, it no longer purchases commodities other than maize. However, government is reluctant to dismantle ADMARC completely due to the role it has played in national food security and provision of a guaranteed market for small farmers, particularly in remote rural areas where private traders have limited access. Government therefore continues to allocate some recurrent funds to ADMARC in order to meet its social marketing objectives.

5.9 ADMARC has a country-wide storage capacity of 458,000 MT spread across 310 locations. 270,000 MT of this existing capacity has been earmarked for purchase by the new privately owned Malawi Warehouse and Transport Company. However, many of the structures require substantial rehabilitation and this will require significant investment.

### **Small Scale Maize Storage**

5.10 In 2007, FAO provided support to MoAFS through a TCP project in the artisanal manufacturing of small metallic silos which are intended for maize storage at farm level. The 600 silos constructed by the project were piloted in several locations with a number of farmers. Following the completion of the project, MoAFS commissioned the fabrication of a further 5,000 silos. These were to be distributed to farmers around the country at a discounted price. From field observations in 2008, it appears that farmers have not been using the silos, even those which were given out free of charge during the pilot phase. Discussions with Department of Crops revealed that since the end of the project, fabrication of additional silos has proceeded at a very slow rate. So far, 40 additional silos have been constructed but not distributed, and a further 22 have been constructed on demand.

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<sup>21</sup> Quality specification are: moisture content: 12.5%; extraneous matter: 1.0%; non-white colour: 2.0%; mould: 1.0%; weevil damage: 1.0%

5.11 An evaluation should be conducted on the uptake of the silos and what factors are constraining their use. Some of these constraints are described in the preceding section on maize. This will inform the development of appropriate interventions to improve post-harvest handling and storage of maize at farm level.

## **B. DONOR (TECHNICAL & FINANCIAL PARTNERS) ACTIVITIES<sup>22</sup>**

5.12 Malawi has relatively fewer donors compared to its neighbours. However, donor funding contributes to about 40% of the budget and is a valuable contribution to foreign exchange. In 2005 net official development assistance reached US\$575m and was estimated to have picked up further in 2006 and 2007. Overall, the main donors in Malawi are DFID, EC, World Bank, African Development Bank, Norway, and USAID. These account for over 90 percent of Malawi's development assistance. Other donors include the traditional UN institutions (notably UNDP, UNICEF, WHO, and WFP), JICA, and GTZ. Donors in Malawi are increasingly becoming more harmonized in the provision of their development assistance. To date, there is pooled funding for sector wide approaches (SWAs) in specific sectors. General budget support is also provided in a harmonized way through the Common Approach to Budget Support (CABS) group. The CABS currently consists of DFID, EC, Norway, and the African Development Bank<sup>23</sup>.

Work on post-harvest issues is not a stand-alone activity. However, most of the projects described below include components related to value-addition and increased efficiency of post-harvest systems with the objective of upgrading commodity specific value chains and linking farmers to markets.

5.13 The European Commission approved in December 2008 a € 90 million general budget support programme for Malawi funded from the 10th European Development Fund (EDF) within the framework of the joint EC Malawi Strategy. The funds are to support poverty reduction measures and sustain economic reforms of the government and will be disbursed over the three financial years 2008/2009 to 2010/2011.

5.14 The EU finances the Farm Income Diversification Project (FIDP, 2007-2010) under the technical department of Land Resources and Conservation of MOAFS. The overall objective of FIDP is to achieve a sustainable improvement in the livelihoods of rural communities through diversifying farmers' incomes. The specific objectives are as follows: (i) contribute to and ensure efficient and effective implementation of the programme through capacity building and provision of technical and operational assistance to the nationally managed programme coordination unit and collaborating institutions; and (ii) contribute to and facilitate achievement of increased food security and income levels of rural households, ensuring sustainable use of soil and water resources, and to facilitate business development, employment and improved marketing of agricultural produce.

5.15 IFAD finances operations in Malawi that: (i) strengthen agriculture as the main livelihood for semi-commercial and emergent farmers by intensifying production, enhancing water management and improving access to profitable markets; (ii) secure and diversify the livelihoods of marginal farmers and vulnerable households by supporting effective use of their limited resources and by promoting non-farm employment opportunities; and (iii) strengthen local institutions and resources at community and household levels by providing support for the decentralization process. IFAD has three on-going projects in Malawi.

5.16 The Rural Livelihoods Support Programme (RLSP) is a sector wide programme focusing on various agricultural sub sectors. The aim of the programme is to improve villagers' access to resources and to ensure more efficient use of available resources. The programme supports Malawi's

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<sup>22</sup> This excludes programmes funded by the ADB, which will be described in annex 9

<sup>23</sup> The World Bank, IMF, UNDP, and Germany are observer members of CABS

decentralization policy, working with the decentralized institutions that are emerging in the villages and with local ministry line staff, who play a key role as service providers. It promotes the active participation of all groups in village-level processes, and particularly that of the poorest groups, including landless people, households headed by women and families affected by HIV/AIDS.

5.17 Co-financed by the World Bank, the Irrigation, Rural Livelihoods and Agricultural Development Project (IRLADP) will provide farmers with seeds and fertilizer to restore agricultural production. To reduce the risks associated with rain fed farming, the project will also support rehabilitation and development of new irrigation systems, reservoirs and rainwater harvesting structures. Farmers will gain access to support services that will enable them to improve marketing of their produce. The project will also strengthen local government institutions and support capacity-building for farmers and their organizations. The project has an emphasis on the development of small-scale and mini-scale irrigation schemes and focuses on rice production. The Rural Livelihoods Economic Enhancement Programme (RLEEP) is expected to start implementation before the end of the year. The main objective is to ensure that poor rural households engaged in agriculture, livestock and fish production have a role in the increasingly competitive, liberalized economy. Activities will focus on supporting poor rural producers so they can benefit from efficient markets and added value for their agricultural products. It will strengthen farmers' participation in the market by improving production, transport, storage, processing and marketing systems for commodities such as groundnuts and Irish potatoes. The goal is to sustainably improve the incomes of economically active poor rural households.

5.18 The World Bank and the Norwegian government are financing the ADP Support Programme (USD\$ 50 million – grant and loan component) which is supporting MOAFS system strengthening (procurement, planning, M&E, etc.) and component 1 of the ADP (now renamed ASWAp) which is related to food security and nutrition.

5.19 Over the years, WFP has bought most of its maize from South Africa. Purchases from other countries in the region have been limited because of drought. WFP has purchased 239,881 MT of food in the country since 2002 (maize, maize-meal, corn soya blend (CSB), pulses, sugar, high energy biscuits, High Energy Protein Supplement and salt). Local purchases represent a value of US\$68.7 million. In 2008 WFP purchased 29,957 MT (USD\$ 15 million), showing a slight decline from 2007 when 90,531 MT (USD\$ 21 million) was purchased<sup>24</sup>. To be included on the P4P vendor list, WFP has encouraged local suppliers to register with the WFP Malawi country office as well as the regional office. WFP is also working with government to assist in the acquisition of export permits for suppliers who have won tenders to export maize to other countries within the region where WFP has operations.

5.20 WFP started its P4P (Purchase for Progress) programme in Malawi at the beginning of 2009. It has signalled its intention to buy from small-scale processors, although it has not done this so far, due to the inability of small enterprises to meet quality specifications. World Vision is working with several small processors to improve their manufacturing practices and quality management systems. This highlights the constraints faced by small-scale industries when trying to access new markets with international quality standards. The programme is also looking to collaborate with General Mills US on research into extending the shelf-life of corn-soya blend.

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<sup>24</sup> These figures represent the quantity and value of food purchases in Malawi for WFP operations inside and outside of Malawi.



## **C. PRIVATE SECTOR ACTIVITIES**

### **Grain Traders and Processors Association (GTPA)**

5.21 GTPA takes on several key functions: (i) lobbying and advocacy: to inform and influence government and donors on policies pertaining to food security, specifically grain production and marketing; (ii) capacity building: members (particularly smaller traders) need a wide range of capacity building interventions including training in technical, marketing and business skills; (iii) facilitation of access to finance: a regulated system of transferred warehouse receipts can help traders access finance which is otherwise extremely difficult to obtain; a Warehouse Receipts System is to be piloted by GTPA; (iv) facilitate access to market information: GTPA has established a network of linkages with regional market information providers for the benefit of its members; (v) facilitation of trade: GTPA has lobbied to lift export and trading bans imposed by government on several occasions and has processed export contracts for its members. It also negotiates better terms and prices for its members in government contracts<sup>25</sup>.

### **Malawi Warehouse and Transport Company (MAWTCO)**

5.22 The Malawi Warehouse and Transport Company (MAWTCO) is a private company which intends to provide warehousing and transport services to traders. It has plans to rehabilitate some of ADMARC's existing warehouses which are no longer in use and some 270,000 MT storage capacity has been earmarked for this purpose. However, significant capital investment is required to upgrade the facilities many of which are old and in a poor state of repair and the company is still looking for capital in order to start operation. Aside from the substantial investment required to rehabilitate the structures, there are also suggestions that the establishment of MAWTCO is being delayed due to ADMARC's reluctance to sell off its assets to the private sector with whom it is now effectively in competition.

### **Farmers World**

5.23 Farmers World is a large trading company dealing mainly in maize, soya and beans bought predominantly from smallholder farmers through its 120 depots in the country. These depots also deliver services to the farmers by selling seeds, fertilizer and equipment. Farmers World entered into partnership in 2008 with Avignon Holdings Pty, a South African company trading in fertiliser and agricultural commodities to introduce a warehouse receipts system (WRS) for maize and soya in Malawi. The objective of the WRS is to improve farmer access to rural finance using the warehouse receipts as collateral to obtain credit from micro finance institutions. A WRS would also facilitate transactions between farmers and commercial buyers and improve market efficiency. The partners are also to set up an option trading system in agricultural commodities. Little information is available on the progress of this initiative although two metal silos with a capacity of 12,000 MT have been constructed.

### **National Small Farmers Association of Malawi (NASFAM)**

5.24 NASFAM is a smallholder-owned business and development organisation founded in 1997. Its main objective is to provide commercial services to the farmers and thereby strengthen the capacity of small-scale farmers to participate more effectively in value chains. The focus is on diversification away from dependency on maize and tobacco, and production and marketing of crops such as groundnuts, chilli, rice, soya, beans and sunflower.

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<sup>25</sup> The operations of traders and an analysis of their constraints are described in "Assessment of the post-harvest practices of large, medium and small-scale traders", a report commissioned by FAO (AGS) in 2008 on the practices of the GTPA.

5.25 NASFAM functions are split into Commercial and Development activities. In the commercial area, three programmes have been developed: crop marketing and value chain addition; input marketing; and tobacco operations. Profits made by the commercial section are ploughed back to benefit the farmers. Programmes on the development side deliver training and capacity building and community development. NASFAM's Commercial and Development operations are respectively divided between an independently registered for-profit company and a legally registered NGO.

5.26 NASFAM conducts a farmer to farmer training programme where farmers train other farmers and providing mentorship. The programme has largely been successful and resulted in improved productivity. In addition the organisation is involved in construction of offices, feeder roads in order to improve access to facilities for their members, marketing centres and warehouses. The construction projects are being undertaken jointly with various donors.

5.27 NASFAM's greatest success has been its transformation of the groundnut value chain after many years of declining exports due to persistent problems with aflatoxins. The organization has been working closely with farmers on traceability of products back to the farm to detect quality problems and has developed a strong linkage with research institutions in Malawi that are developing improved varieties of groundnut. It has engaged Fair Trade to help with the development of the overseas market, however, there are challenges related to the cost structure which are a burden to the organisation. The organization recognizes that it is not feasible to add value to everything, and it is necessary to focus on areas of specialisation. In this regard, they are looking for joint venture partners.

### **Malawi Agricultural Commodity Exchange (MACE)**

5.28 The Malawi Agriculture Commodity Exchange (MACE) Ltd was established in 2004 by the Initiative for Development and Equity in African Agriculture (IDEAA) project to respond to the agriculture market liberalization challenges faced by smallholder farmers. MACE was registered as a private limited company in 2007. Its objective is to facilitate linkages between buyers, sellers, importers and exporters, and provide timely and relevant information to enhance market efficiency and competitiveness in the agricultural sector. The MACE central hub is in Lilongwe and is responsible for receiving, processing and dissemination of market information from/to the market information centres (MICs), users (farmers, traders, processors, exporters and importers) via field staff, email, fax, internet and SMS. The organization has two main components: (i) Collection and Dissemination of Market Information; and (ii) trade opportunity information.

5.29 Price data is collected on a daily basis from 17 markets for 51 commodities. Prices are sent by SMS to the central hub and updated on the internet server. Farmers dial in a cell number to access the prices. The data is also posted on the MACE website and emailed to subscribers. Market information is also disseminated on a weekly basis by radio.

5.30 Buyers and sellers can place offers and bids on the MACE central hub and this information is disseminated to the market centres and all interested users. Furthermore, MACE identifies business tenders through newspapers and internet media and links these with members who might supply the tender.

5.31 MACE has built in cost recovery systems with the aim of achieving at least partial financial sustainability. Subscribers pay MK 500 to place a bid (MK 100 in rural areas) and once a deal has been concluded, MACE gets 5% of the total contract value. Subscribers also pay to advertise on the radio programme and the Market Information Centres sell various agricultural inputs at a profit. Price information is charged at US\$ 0.14 per SMS. From this, \$ 0.09 goes to the telephone service provider and \$ 0.05 to MACE, who bill the telephone company. All those trading through MACE are required to register and pay US\$ 100 per annum. However, in recognition that many small farmers cannot afford the annual fee, MACE allows individuals to make a MK 500 payment each time they want to trade.

MACE has established a code of conduct for its subscribers, but cannot enforce this for casual users. This has led to farmers side-selling and renegeing on contract agreements, and makes it difficult to deal with buyers who require quality standards and regular delivery. An Intermediate Buyer such as a Warehouse Receipts System is required to interface between farmers and buyers to ensure quality, quantity and regular supply.

### **Africa Invest (Malawi) Ltd**

5.32 Africa Invest Ltd was established in 2006 and currently has seven commercial farms with combined land of 2,600 hectares and a smallholder extension scheme engaging over 5,000 smallholder farmers. The company has invested in irrigation systems and mechanisation for the commercial farms to ensure that crops are grown all year around. A wide variety of crops are grown, ranging from paprika, chilli, soya, wheat, potatoes, maize and rice (some US\$9 million in 2008). The outgrower scheme was launched in 2008, and has 367 registered clubs, each with 15-20 members. Clubs are provided with subsidised seed, a trial chemical pack and technical advice from a support network of outgrower managers, field supervisors and lead growers. Micro credit will soon be introduced to the clubs as well as special incentive schemes. In terms of marketing, there has been high demand for the crops due to their high quality; paprika and chilli have been in particularly high demand in export markets.

5.33 The Africa Invest model holds promise as it encourages participation of smallholders in efficient, commercial agricultural that produces high quality crops with good market potential, and could make a substantial impact on poverty alleviation through sustainable private sector support rather than government or donor intervention. The Africa Invest model combining large scale commercial farms with outgrower schemes is to be replicated in seven other African countries whose governments have confirmed support.

### **Ngolowindo Horticultural Cooperative Society**

5.34 The Ngolowindo Horticultural Cooperative Society was formed with the assistance of an EU funded irrigation project. The society has 168 members and 17 hectares of irrigated vegetable production. Initially, the society was producing large quantities of tomatoes for which they did not have a ready market. However, simple juice extraction equipment has been purchased (locally designed by Chitedze research station) and the society is now processing tomato baobab juices which it sells to markets in Lilongwe. The products have been certified by Malawi Bureau of Standards and the society is now negotiating for a contract with Shoprite. This example demonstrates that with well targeted capacity building, farmer associations can access profitable market opportunities.

## **6. GOVERNMENT INTEREST IN PHL REDUCTION**

6.1 The government seems to be well aware of the potential benefits of reducing post-harvest losses. Especially for the food security crops, it is acknowledged that investments in post-harvest handling and storage are needed. For the moment the emphasis seems to be on improving storage for maize. At the mission wrap-up meeting, government representatives referred to the maize surplus created by the subsidy programme and underscored the need for developing new models for grain handling and storage, including improved drying facilities, larger scale storage at community level and a Warehouse Receipts System to stabilise supply, act as collateral for traders to access finance and improve the performance of the marketing system. Opportunities do however exist to reduce post-harvest losses and add value to a number of other commodities. In this regard, the ASWAp makes various references to the reduction of post-harvest losses and has targeted some commodities in promoting value addition. The wrap-up meeting concluded that government would prioritise other key commodities for post-harvest loss reduction after reviewing the findings of the FAO/AfDB post-harvest loss assessment.

### **Budget Allocations to Agriculture**

6.2 With the introduction of the agricultural input subsidy programme for the 2005/06 agricultural season, the share of agriculture in the total budget increased. The agricultural input subsidy is estimated to be about 50 per cent of the agricultural expenditures. In the 2006/07 fiscal budget, the allocation to the agricultural sector was US\$121 million, almost double the level in the 2005/06 budget, of which US\$44.8 million was from the development budget. The share of the agricultural sector rose to 12 per cent of the total 2006/07 national budget and the development expenditure allocation more than doubled and constituted 13 per cent of the development budget. Approximately 70 per cent of the budget was allocated to recurrent expenditures, and 30 per cent to development expenditure. The recurrent budget of the MoAFS largely supports agricultural subsidies. Two-thirds of the recurrent expenditure is being used to subsidize the distribution of fertilizer and maize seed. Only 9 per cent of the Ministry's recurrent funding is allocated to personnel costs. Donor commitments to the MoAFS account for 84 per cent of the MK6.2 billion development expenditures of the Ministry.

6.3 The heavy burden on the MOAFS budget for the fertilizer and input subsidy programme, restricts the investment in other agricultural activities such as research and extension. Even if government expresses their concern of the need to improve post-harvest management, especially in view of the recent maize surpluses, this commitment will need to be backed by sufficient resource allocation.

### **Budget Allocations to Post-harvest**

6.4 All proposed activities in the ASWAp have been costed. There is one output in the Food Security and Nutrition Programme that specifically addresses the post-harvest issue for cereals, including the production and distribution of metallic and concrete silos. Costs of these activities are estimated to be US\$ 16,623,200 in 2008/09 increasing to US\$ 21,199,800 in 2011/12. When taking into account all post-harvest and agro processing interventions, MoAFS has budgeted approximately US\$ 60 million in 2008/09 to US\$ 80 million in 2011/12. This represents around 20% of the ASWAp budget. It appears the government has prioritized post-harvest activities related to realizing maize self sufficiency.

## **7. OPPORTUNITIES FOR ADB INTERVENTION IN PHL REDUCTION**

### **A. ANALYSIS OF ADB'S SMALLHOLDER CROP PRODUCTION AND MARKETING PROJECT**

7.1 ADB has two ongoing projects in Malawi (see Annex 11), one of which, the Lake Malawi Artisanal Fisheries Development Project, is expected to close relatively soon. Four other projects have been completed recently. Therefore, the analysis to assess the opportunities for interventions in PHL reduction of ADB projects in Malawi focuses solely on the Smallholder Crop Production and Marketing Project.

#### **Observations**

7.2 The project document, Quarterly Progress Report (Jan – Mar 2009) and recent Aide Memoire of the supervisory mission (May-June 2009) highlight the need for strengthening and revising the project's design features and strategies relating to its post-harvest loss reduction and marketing component. The following issues require particular attention:

#### **a) Focus on commercially oriented farming strategies**

7.3 The dominant crop being cultivated is maize while vegetables are treated as secondary crops. The income levels generated from maize cannot surpass the income that would be made from vegetables. It is therefore critical that deliberate efforts are made to encourage diversification and allocate a proportion of the irrigated plot to higher value crops aimed at specific markets in order to maximise farmer income and ensure adequate revenue is generated to finance the irrigation scheme's operation and maintenance and ensure long term sustainability.

7.4 In this regard, the project needs to pay more attention to developing marketing linkages between farmers and buyers in higher value markets rather than focusing only on marketing infrastructure (market points and storage facilities). The formation of cohesive farmer groups or associations is critical to this process. Farmers can only access higher value markets if they are well organized, produce marketable quantities of a product and improve quality standards through better post-harvest handling and grading of produce. This has to start with joint production planning, whereby a group makes a business plan, agrees on which crops they will jointly grow, and bulk them for purposes of value-addition and marketing. Farmers cannot be given a free choice to grow whatever they wish as this will result in fragmented supplies of poor quality.

7.5 The lack of market linkages and formal market channels is characterised by the prevailing practice of individual farmers selling informally through vendors or middlemen, who buy produce from the farmers to sell in distant markets. In this arrangement, there is no contract and no fixed price, and farmers often sell their produce at significantly lower prices than if they were to market the produce themselves. If the farmers were properly organized, their produce could be bulked and marketed as a group, and formal contracts established with buyers in specific markets, with agreed quantities, quality standards and price.

#### **b) Capacity building for farmers**

7.6 In order to make the transition from subsistence to market oriented farming, a change of mind-set is needed. Farmers will require extensive training in business management and marketing

skills, together with technical assistance in post-harvest handling, value-addition and compliance with quality standards. The consultant MASDAR (UK) has recruited and trained researchers for a market competitiveness study, but this study by itself is not enough for small-scale, subsistence oriented farmers to access and compete in higher value markets. Farmers lack capacity to use market research findings to re-orientate their activities to more commercial farming, or to make market-driven choices regarding crop diversification. This can only be done through long-term systematic training and capacity building in the areas highlighted above, supported with advice and guidance from qualified service providers. So far, a number of farmers have received training in financial planning, business management and record keeping, but no training has been given in post-harvest handling, value-addition or quality standards. The impact of the trainings has not been evaluated, but it would appear that much still needs to be done in this area, as the Aide Memoire observes that there has been no proper documentation of data on yields, costs and incomes, making it impossible to measure benefits and make comparisons between different crop enterprises.

7.7 The Department of Agricultural Extension Services has a deficit of staff in the field and are sometimes not well equipped with adequate skills and knowledge. Furthermore, extension staff lack knowledge in business management, marketing, post-harvest handling and value-addition, as Ministries of Agriculture have tended to have a production oriented focus. It is therefore crucial to identify alternative service providers such as NGOs or other institutions with expertise in business management, marketing, post-harvest handling and value-addition, and ensure that extension staff and lead farmers receive systematic training and support in these areas.

### **c) Market information systems**

7.8 MASDAR (UK) has embarked on the preparation of a market information system (MIS) concept paper. A reliable MIS system is crucial for market oriented farming. However, rather than establishing a new MIS system solely for use of the project, it may be more practical and sustainable for the longer term to link into existing national MIS systems such as the Malawi Agricultural Commodity Exchange (MACE), which provides a nationwide service to farmers on commodity prices as well trade opportunity information including bids and offers. The Market Information Centres (MICs) established by MACE also sell a variety of inputs to farmers including fertilizer, pesticides and certified seed.

### **d) Marketing infrastructure**

7.9 The Aide Memoire notes that the project received a Bank no-objection on the designs of the market centres (MC) and communal storage facilities (CSF). However, there is no information on the design, size, location or intended use of these facilities.

7.10 It is assumed that the CSFs are intended for storage of grains, as perishable produce has completely different storage requirements (and will more appropriately be bulked and stored in a market centre to facilitate rapid transportation to market). The role of the CFS needs to be carefully assessed, as communal storage facilities will only be relevant where farmers are producing a marketable surplus of grain which they wish to market jointly. This may true in some of the project locations but not in others. The size of surplus will also dictate the size and cost of the facility. In addition, the costs of storage management and maintenance of the structure need to be considered in terms of cost recovery and sustainability. A simplified warehouse receipts system or grain bank might be effective in some cases; farmers sell their grain thus transferring storage loss risks to the warehouse or grain bank, and buy back at time of need. However, the need for this type of intervention will need to be assessed on a case-by-case basis.

7.11 The design and role of the market centres is also unclear, although they do hold significant potential for bulking and adding value to fruits and vegetables. The majority of markets in Malawi have

very basic infrastructure and lack potable water, sanitary facilities, electricity and telecommunications. While fruits and vegetables are produced in abundance, their low quality exacerbated by weak market linkages and poor infrastructure creates substantial wastage and post-harvest loss, and farmers do not realise the full economic potential from their production.

7.12 Quality of fruits and vegetables could be significantly improved by installing potable water supplies, waste disposal systems and latrines. Construction of concrete platforms and roofing would reduce dust, and help keep produce clean and protected from the sun and rain. Ventilated packing sheds for specific horticultural products might also be considered, as well as investment in appropriate transporting materials such as crates and boxes to reduce spillage, breakage and bruising.

7.13 Construction of market structures with such facilities would give well organized farmer groups a significant competitive advantage in marketing their horticultural produce. Refrigerated market structures are not considered feasible due to erratic electricity supply and high cost, but refrigerated vans for transporting produce over long distances to high value urban markets may be a practical investment, as they will contribute to maintaining produce quality. The operation and management of the vehicles can be provided by a service provider such as an NGO or a private sector company in collaboration with farmer groups, who will pay transportation fees. Where farmer groups are well established and have a developed marketing system, opportunities could be explored to invest in transportation for farmer groups.

7.14 The construction of the marketing centres needs to be accompanied with improvement of feeder roads to improve access of farmers and buyers. Upgrading selected feeder roads will improve marketing opportunities for farmers (some feeder roads are inaccessible during the rainy season) and will reduce post-harvest losses due to bruising and damage of produce during transport, and minimise delays in getting produce to and from market. Furthermore, losses incurred because of transport breakdown due to poor roads will be reduced. Especially for horticultural and other perishable commodities, upgrading rural roads networks will have a significant positive impact.

7.15 Rehabilitation of existing ADMARC facilities may be considered as an alternative to constructing new marketing centres in some of the locations. ADMARC has more than 300 marketing centres country-wide and many of these have fallen into disuse. Rehabilitating selected ADMARC structures may be a more cost-effective and efficient means of improving marketing infrastructure in the project locations. However, this would have to be reviewed on a case-by-case basis.

7.16 Finally, but very importantly, there is a key opportunity to expand the role of the marketing centres from providing mere physical infrastructure to provision of additional services such as sale of inputs, simple agro-processing and packaging equipment where farmer groups can add value to their produce by grading, cleaning and packaging of fresh produce, and preservation of fruits and vegetables into jams, juices, chutneys and dried products. The centres could also provide training and advisory services in value-addition, compliance with quality standards, business skills and marketing. The trainings could include practical demonstrations where farmers have the opportunity to try out new skills for themselves. The modalities for charging for services and cost recovery mechanisms would have to be worked out.

7.17 Below is a summary of the key points that need to be addressed to strengthen the post-harvest loss reduction and marketing component of the project:

- Encourage diversification away from maize to higher value crops (fruits and vegetables) that have an established market demand
- Promote farmer cooperation and organization to grow, bulk, add-value and market selected crops
- Develop market linkages between buyers and farmer organizations and establish contracts

- Identify service providers who can provide high quality training and support in business management and marketing and technical issues including post-harvest handling, value-addition and quality standards
- Develop a systematic business and technical training programme for farmer groups and extension staff
- Liaise and cooperate with Malawi Agricultural Commodity Exchange (MACE) to provide farmers with market and trade opportunity information
- Review the role and need for Communal Storage Facilities on a case-by-case basis and where appropriate, provide additional management and technical support to establish warehouse receipts systems, grain banks and marketing opportunities for grain
- Review the role of the Marketing Centres, equip with appropriate infrastructure, and provide additional services including sale of inputs, provision of agro-processing and packaging equipment, and training and advisory services in value-addition, quality standards, business skills and marketing.

## **B. SCOPE FOR NEW PROJECTS**

7.18 As already raised, post-harvest loss reduction activities have a major economic impact and should increasingly become a major focus in development strategies: carefully selected interventions leading to reductions in PHL are likely to be much more cost-effective than investments in additional production. Increasing production implies using scarce and costly resources through intensive farming practices and expansion of cultivated areas. The marginal environmental cost of qualitative and quantitative saving through improved post-harvest techniques is generally much lower than trying to reach the same value through additional production. PHL reduction aims at maintaining or optimising the value of already existing (produced) products through improved and cost-effective conservation and value-addition strategies.

7.19 Furthermore, post-harvest activities generate on- and off-farm employment opportunities in rural areas, reduce rural exodus, enhance rural income, contribute to value-addition and increased competitiveness. Post-harvest activities generally belong to a more formal sector and should, directly (tax on revenues) and indirectly (VAT) participate in increasing public revenues. In addition, post-harvest activities, including transformation and marketing, are to a large extent assumed by women thereby contributing to increased female empowerment.

7.20 There are various stakeholders involved in activities related to reducing post-harvest losses. Programmes and projects listed above all have element that relate to post-harvest management, research and extension, value chain development and marketing. It is strongly advised that any future intervention will take into account the ongoing activities and will form collaborative partnerships with key institutions and stakeholders. Newly proposed PHL activities should build on existing programmes, replicate best practices and/or address current gaps, and based on the priorities identified in the ASWAp. For all interventions proposed capacity building for the government institutions and relevant NGOs is essential. With these factors in mind, the following recommendations to support post-harvest losses reductions can be made:

### **Support interventions at production level**

7.21 It is acknowledged that reduction of post-harvest losses has to start on the field. Therefore interventions at production level through variety development and adoption of new varieties (e.g. longer shelf life of cassava and yam), capacity building on good agronomic practices and planting-harvesting calendars, and good harvest practices and/or mechanization (planting and harvesting) should be considered.



7.22 By choosing a variety most suitable for the envisaged post-harvest processing, losses can be reduced. Improved crop varieties can minimise losses incurred during harvesting, handling, transport and storage. Increasing the shelf life of certain commodities will allow for more opportunities for processing and marketing.

7.23 In parallel to variety development the need exists to train farmers on the selection of the crop varieties. This depends again on what they intent to do with the produce after harvest. In addition to variety selection, training needs to be provided on the timing of planting and harvesting as this also affects post-harvest losses, and most important on harvesting practices. Research Institutes, MoAFS' extension agents and possibly (local) NGOs should be key partners in delivering this kind of training. MoFA extension agents may need to be trained through a training-of-trainers trajectory first.

### **Promote farmer and producer organisations**

7.24 Farmers have to be made aware of the advantages of employing good post-harvest management practices. One way of doing this is by making them aware of the opportunities to access new markets and generate income. This can be done through awareness campaigns, most efficiently delivered through farmer groups or so-called Farmer Based Organisations (FBOs). In addition to awareness raising, training and capacity building is most efficiently delivered through organized producer structures, especially in a country like Malawi, where the capacity of the extension service providers is limited.

7.25 Furthermore, farmer organisations are generally more able to access rural finance, which will in turn have a positive effect on the adoption rates of (improved) post-harvest technologies. Several initiatives are ongoing aimed at building and strengthening producer and processor organisations dealing with different commodities.

### **Support small holder adaptation of appropriate technologies and technology support**

7.26 A widespread constraint for most smallholder farmers is the inability to adopt available technologies. Often (improved) technologies for harvesting, handling and processing are available but not accessible for farmers and producers. The main reason why farmers are unable to adopt these technologies is the lack of access to finance and uncertain return on investment. Farmers are mostly aware of the advantages of improving their harvest and post-harvest handling practices, but they are unable to finance the required investment. Even when finance is available, it may not be in the farmer's best interest to invest unless the investment (and cost recovery) can be justified by a market feasibility study and business plan. Additionally, the smallholder farming system is not conducive to investing in for example large harvesting machines and tractors. The small plot sizes can not justify these types of investments. These constraints can be overcome by supporting farming organisations and promoting the outgrower and contract farming system, whereby investments in technologies and equipment can be made collectively. It is important to note that when farmers and processors invest in appropriate technologies and equipment, they need to be able to access maintenance support and obtain spare parts. Provisions will need to be made to set up/strengthen rural workshops where small repairs and maintenance can be undertaken.

### **Support ongoing initiatives on Warehouse Receipt Systems (WRS)**

Ongoing initiatives (e.g. by GTPA and Farmers World) aimed at introducing warehouse receipts systems (WRS) could be also an alternative to on farm storage which lacks appropriate structures and expertise. The government in the ASWAp is also targeting the establishment of the WRS and the promotion of village grain banks. These kinds of interventions will reduce the losses incurred by farmers during storage, and allow them to transfer the storage loss risks to grain banks or warehouses.

Another advantage of WRSs, indirectly linked to post-harvest, is that they are a means to facilitate credit provision to the agricultural sector. This is especially of importance when, as is the case in Malawi, other forms of formal credit are relatively difficult to obtain.

### **Investment in post-harvest hardware**

7.27 In addition to capacity building, training and making technologies more accessible for smallholder farmers, the various agricultural sectors would benefit from strategic investments in post-harvest hardware. These investment needs are naturally commodity specific, based on the unique needs in each sub-sector. Examples of investments that could contribute to reduced post-harvest losses could be: construction of rural markets for tobacco; drying facilities for maize at farm level; and low-cost storage facilities for seed and ware potato.

### **Support commercial farmers, traders and processors in investments in storage and marketing**

7.28 There is need to strengthening the capacity of the private sector in terms of product storage, market development and linkages. Possible partners could be the NFRA, who are for the moment passing on all the risk to their suppliers, GTPA and WFP. Improving the quality of the grain supply would be beneficial to these institutions as they are some of the main grain purchasers in the country. By making credit more accessible and creating a conducive environment, commercial farmers, traders and processors will be more willing to make investments in this area.

### **Strengthen extension providers in post-harvest management**

7.29 Many of the potential post-harvest interventions will include elements of training. MoAFS and in particular its extension agents will play a pivotal role in delivering these trainings to farmers. It is therefore very important that MoAFS district offices and the extension staff will be facilitated in terms of logistical support and capacity building.

### **Support physical access to markets**

#### *1. Upgrade rural infrastructure network*

7.30 There is need to upgrade feeder roads in most rural areas in Malawi. Experience has taught that just rehabilitating or upgrading feeder roads brings only temporary improvement. During the rainy season many of the feeder roads get damaged to such extent that frequent repairs are required to keep the roads in good conditions, especially for (heavy) trucks. The non-tarmac feeder roads require continuous maintenance and government's budget allocation to support this kind of maintenance is essential. Often roads have been upgraded without taking into consideration the costs of maintenance and including this in public budgets. Upgrading selected feeder roads to grade 1 roads will improve marketing opportunities for farmers and will contribute to reduce post-harvest losses due to bruising and damage of the produce during transport. Also losses incurred (both qualitative and in term of market opportunities) because of transport break-down due to poor roads will be reduced. Especially for horticultural and other perishable commodities, upgrading rural roads networks will have a significant positive impact.

#### *2. Market infrastructure*

7.31 The majority of markets in Malawi have very basic infrastructure and lack potable water, sanitary facilities, electricity and telecommunications. Post-harvest handling and quality of produce could be significantly improved by installing potable water supplies, waste disposal systems and latrines. Construction of concrete platforms and roofing would reduce dust, and help keep produce clean and protected from the sun and rain. Ventilated packing sheds for specific horticultural products might

also be considered. Lack of reliable electricity appears to be a major constraint for all business, including agro-processing.

### *3. Invest in transport capacity: cooling vans and appropriate transport*

7.32 Not only upgrading the rural networks will contribute to reduced post-harvest losses of certain commodities, also investing in appropriate transport will have a positive impact. Cooling vans will contribute to ensuring improved quality standards for horticultural products, animal products and fish. This is especially important when targeting international and regional markets. For both perishables and non-perishables, investment should be made in appropriate transporting materials such as crates and boxes to reduce spillage, breakage and bruising. The operation and management of the vehicles can be provided by a service provider such as an NGO or a private sector company in collaboration with farmer groups, who will pay transportation fees. Where farmer groups are well established and have a developed marketing system, opportunities could be explored to invest in transportation for farmer groups.

## **Improve post-harvest handling for maize**

7.33 The agricultural input subsidy has had a major impact on post-production issues in the maize sector as described in this note. The sizeable maize surplus created in the past few years requires a review of current handling, storage and marketing arrangements at farm, trader and national level, including review of the minimum price and export policies. It also requires much more systematic support to the private sector to build their capacity to take over some of the functions previously undertaken by ADMARC and NFRA. In this regard, it will be important to ensure participation of traders and the private sector in major post-harvest government and donor supported initiatives that have previously tended to focus only on farmers.

## **Quality standards and grading systems**

### *1. Support introduction and enforcement of grading systems and quality standards*

7.34 The introduction and enforcement of grading and quality standards will work as an incentive for farmers, traders and processors to invest in post-harvest technologies. If higher prices can be ensured they will see the immediate benefits of their investments. The fact that now prices, especially for cereals, are often similar irrespective of the quality of the produce, leads to a situation whereby producers and processors do not see the need to invest in post-harvest technologies. Furthermore, trading and processing companies need clean quality inputs in a steady supply. Introduction of an enforced grading system will help processors and traders in purchasing the right quality inputs. The Malawi Board of Standards is the authority responsible for the development and enforcement of standards and has to be a key partner.

### *2. Capacity building for MBS and other government institutions*

7.35 Linked to the previous recommendation, is the need to strengthen the capacity of the MBS and other relevant government institutions, such as the departments for crops development, animal production, fisheries and extension, in setting and effectively enforcing quality standards. Capacity building is required both in terms of training and expansion of human resources, but also by providing the necessary hardware, such as laboratories and equipment for testing and transportation for extension agents.

### *3. Build consumer awareness on food safety and quality standards*

7.36 In line with the two recommendations above, there is a need to simultaneously raise consumer awareness on food safety and quality standards. Well educated consumers will demand certain quality standards and will pay for their food based on their priorities and purchasing power. This

will work as an incentive for producers and processors to invest in post-harvest management and to raise quality standards. However, it must be realised that in a poor country such as Malawi the impact of this kind of awareness raising on consumption pattern may be limited.

7.37 The two issues below are more general recommendations related to the functioning of the Malawian agricultural economy. A sound enabling environment for producers, traders, processors and other players along the value chain, is believed to have an overall positive impact on all aspects of the agricultural sector, including post-harvest management.

### **Facilitate dialogue and cooperation between value chain stakeholders, including farmers, traders, processors, exporters and policy makers**

7.38 With the exception of the export commodities, value chains of most commodities in Malawi are not well developed and the roles and responsibilities of the various stakeholders along the chain are often not clearly pronounced. Even for export commodities, such as tobacco, the supply chain for smallholder producers (in outgrowers schemes or through contract farming) often leaves room for improvement. To have efficient and optimally functioning value chains it is important that dialogue between value chain stakeholders is promoted. These dialogues will be vehicles to discuss issues related to standards and quality, contract farming and outgrower schemes. Clear understanding of expectations and deliverables can facilitate the investment in proper post-harvest technologies as some of the risks related to selling (i.e. for farmers and traders) and buying (i.e. for producers and traders) of the produce are mitigated. The commodity value chain working groups or the intergovernmental bodies, as proposed under the NRGP, could facilitate these kinds of dialogues.

### **Promote realistic price formation**

7.39 The efficient functioning of the agricultural markets in Malawi depend on fair and transparent price formation taking place that links supply to demand and price to quality. Both are currently lacking. The government sets minimum price standards for most agricultural commodities. As a result, some domestic processors of certain commodities are experiencing difficulties in obtaining raw input materials as prices are artificially high. Particularly for export commodities, allowing competitive pricing of agricultural commodities could be a stimulus for production. The prices paid for commodities locally have to reflect the costs of production, transport, processing and marketing, but most importantly of all, they have to bear a proportional relationship to international prices. This is currently lacking in some sectors where intervention prices do not bear relation to international prices; cotton is a case in point. In other sectors such as groundnuts, parastatal buyers have entered the market buying crop at 25 percent above current wholesale market prices. This effectively excludes Malawi from international markets, decreases investment in the sector and creates future false expectations amongst farmers, who may not be aware of the cost structure of the market locally and internationally. While recognizing the political sensitivity of this issue, ensuring a realistic pricing mechanism is in place will be beneficial to both export and domestic processing activities.

## 8. NEXT STEPS AND FOLLOW-UP ACTIONS

8.1 Reduction of Post-Harvest Losses (PHL) is a priority area of collaboration between the African Development Bank (ADB) and FAO. It is one of three pillars identified by the ADB within its African Food Crisis Response (AFCR) of June 2008. The current collaboration between ADB and FAO focuses on 2 pillars. Pillar I: Screening of ongoing ADB projects and sensitization of ADB staff in PHL and value chain development issues; and Pillar II: preparation of a Framework Paper for a Continental Programme on PHL for ADB, based on needs assessments carried out in about 16 African countries.

- FAO (AGS) has engaged a national consultant<sup>26</sup> to collect additional information and provide data on other commodities, including rice, cotton, coffee and nuts, as per the government's suggestions. This additional data will be integrated into the country assessment and shared with ADB and MoAFS for their consideration and reaction.
- ADB should contact the World Bank to start the process of joint planning for a country validation workshop, as has been discussed previously with FAO, linked with the World Bank's study on Post-Harvest Loss Reduction Technologies and Practices for Basic Grains in Sub-Saharan Africa.
- ADB should liaise with MoAFS to assume leadership for the organization of the country workshops with technical assistance from FAO Country Office, ADB Field Office and the WB Country Office. The country validation workshop, which should involve the various stakeholders of the commodity chains of particular importance to Malawi, should result in the development of specific and relevant action plans (i.e. further commodity specific studies and appraisals).
- Based on the country assessment, the outcomes of the validation workshop and subsequent studies, a series of specific investment plans could be developed in order to realize PHL reduction. Malawi has advanced with the CAADP Country Roundtables process and is expected to sign their compact shortly. The time is opportune for incorporating PHL reduction interventions into their CAADP Compact-based national investment programs. FAO could provide technical assistance, as required by the GoM, for designing these investment programs.
- Based on the project screening of the Smallholder Crop Production and Marketing Project (see section 6.1) ADB could make some immediate improvements in the design of the project component on the post-harvest loss reduction and marketing component. FAO could provide more specific technical assistance in undertaking this redesigning exercise.
- ADB should initiate discussions with IFAD to assess the possibility to integrate PHL reduction activities in some of IFAD's ongoing programmes, such as the Rural Livelihoods Support Programme (RLSP) and the Irrigation, Rural Livelihoods and Agricultural Development Project (IRLADP) (see annex 10). RLSP is a sector wide programme. Opportunities exist to link with the second component, specifically when considering the programme activities related to maize, dairy and livestock production. Possibilities exist to include/strengthen processing interventions, through trainings and making technologies and equipment. IRLADP's irrigation activities focus mostly on rice production. Post-harvest losses reduction foreseen in the rice value chain should link with the project to utilize existing and established structures and to build on any ongoing rice post-harvesting, processing and marketing activities. Support services under the project could be expanded to include post-harvest components.

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<sup>26</sup> From 03 December 2009 for one month

# **ANNEXES**

## Annex 1: General Country Data & Social and Agricultural Statistics

		Remarks
<b>General</b>	<p><u>Area</u>: 118 500 km<sup>2</sup>  <u>Land</u>: 90 000 km<sup>2</sup> <u>Water</u>:28 500km<sup>2</sup>  <u>Population</u>: 13,6 million (2006)  <u>Pop. Growth rate</u>: 2,8% (2008)  <u>Altitude range</u>:  <u>Temperature range</u>:  <u>Relative humidity</u>:  <u>Precipitation (mean annual)</u>: <u>Precipitation Range</u>:</p>	
<b>Social</b>	<p><u>Life expectancy at birth</u>: 46.3 (2005)  <u>% of pop. under poverty line</u>: 52.4% (2004)  <u>Literacy rate</u>: 64.1% (Male: 79% ;Female: 46%)  <u>UNDP Human development index</u>: 0,437 (164<sup>th</sup>)</p>	
<b>Market Access</b>	<p><u>Paved roads (km/km<sup>2</sup> - status)</u>: 161km/1000km<sup>2</sup>  <u>Unpaved roads (km/km<sup>2</sup> - status)</u>:  <u>Railways</u>:  <u>Landlines</u>: 0.8% access (2007)  <u>Mobiles</u>: 3.3% access (2007)</p>	
<b>Agricultural stats.</b>	<p><u>Land cultivated</u>: 48.8 % of total area (2005)  <u>Arable land</u>: 31 987 km<sup>2</sup> (2008)  <u>Area under irrigation</u>: 2,2% (2002)  <u>Population employed in agriculture</u>: 82% (2003)  <u>Agricultural GDP as share of total GDP</u>: 24% (2007)  <u>Average annual growth</u>: 10.9% (2006)  <u>Agriculture contribution to foreign exchange</u>: 80% (2007)  <u>Food imports (% of merchandise imports)</u>: 12,7% (2004)  <u>Fertiliser use ('00s grams per ha of arable land)</u>: 839.2 (2002)</p>	
	<p>Major crops (in order of importance, in production MT):</p>	<p><u>Smallholder staple foods</u>: Maize, sorghum, millet, root crops and pulses.  <u>Smallholder cash crops</u>: Tobacco, groundnuts, rice, cotton and maize  <u>Commercial estates</u>: Tobacco, tea, sugar, coffee and horticultural crops.</p>
	<p>Major agricultural exports (in order of importance, either MT or value)</p>	<p>Tobacco (55% of all exports), sugar, teas</p>
	<p>Major agricultural imports (in order of importance, either MT or value)</p>	<p>Maize (some years)</p>

## Annex 2: Crop/Commodity Mapping




(To be developed possibly as maps and/or in table showing commodities per country region/agro-ecological zone)



### Administration



### Farming Systems

	Root crop Area (km <sup>2</sup> ) 934.01
	Cereal-root crop mixed Area (km <sup>2</sup> ) 17365.23
	Maize mixed Area (km <sup>2</sup> ) 100612.04



### Annex 3-A: Production of Main Commodities

Rank	Commodity	Production (Int \$1000)	Flag	Production (MT)	Flag
1	Potatoes	388701		2858811	
2	Maize	351467		3226418	
3	Cassava	233398		3238943	
4	Tobacco, unmanufactured	215140		118000	F
5	Groundnuts, with shell	116229		261810	
6	Plantains	66543		300000	F
7	Indigenous Cattle Meat	54958		26572	Fc
8	Bananas	54866		385000	F
9	Pigeon peas	52856		159365	
10	Sugar cane	51925		2500000	F
11	Tea	49795		46000	F
12	Beans, dry	39430		128632	
13	Vegetables fresh nes	32651		174000	F
14	Fruit Fresh Nes	31582		198000	F
15	Cotton lint	29095		19600	F
16	Indigenous Goat Meat	26074		17125	Fc
17	Indigenous Pigmeat	25334		25018	Fc
18	Rice, paddy	23352		113166	
19	Indigenous Chicken Meat	18378		15756	F
20	Hen eggs, in shell	15886		19500	F

F : FAO estimate

Fc: Calculated data

Source FAO 2007

Commodity	Production <sup>1</sup>	Imports <sup>2</sup>		Exports <sup>2</sup>		Consumption
		<i>MT</i>	<i>value (million MWK)</i>	<i>% of total</i>	<i>value (million MWK)</i>	
Cereals						
- Maize	2,948,507					
- Rice	132,239					
- Sorghum	63,698					
- Millet	32,251					
- Wheat	4,605	4,138*	3%			
- Soy bean (oils)		2,062	1%			
Pulses	407,531					
Legumes						
- Groundnuts	261,810			1,094	1%	
- Cashew	283					
- Macadamia	35					
Oilseeds						
Root & Tubers						
- Cassava	3,608,017					
- Sweet potatoes	2,578,825					
- Irish potatoes	673,438					
Horticultural products						
- Paprika	1,808					
- Chillies	1,109					
- Sesame	504					
Export products						
- Tobacco	306,351	7,071	4%	55,840	61%	
- Cotton	63,290			1,833	2%	
- Sunflower	5,910					
- Coffee	1,403			381	0.40%	
- Tea	46,000 <sup>3</sup>			6,737	7%	
- Sugar				5,418	6%	
Animal products						
- Milk						
- Meat						
Fish						

**Annex 3-b: Production, import/export and consumption of main commodities**

<sup>1</sup> Production figures from MOAFS (2007/08)

<sup>2</sup> Trade figures 2006

<sup>3</sup> FAO calculations 2007

\* Includes import of meslin

## **Annex 4: ASWAP Focus Areas Highlighting PHL Interventions**

The ASWAp has targeted three focus areas, two key support services and two cross-cutting issues. Summarized below are the main components of the focus areas, highlighting proposed interventions related to post-harvest losses reduction, value chain development and value addition.

### **Focus area 1: Food Security and nutrition**

- *Maize self-sufficiency through increased maize productivity and reduced post-harvest losses*
  - Promote improved on-farm storage technologies (food and seed).
  - Promote improved on-farm storage facilities through construction of cement and metallic silos for seed and grain, training of local artisans to manufacture the silos and use of improved granaries at household level.
- *Diversification of food production and dietary diversification for improved nutrition at household level with focus on Crops, Livestock, and Fisheries*
  - Train extension staff and households in processing, preservation and storage of food
- *Risk management for food stability at national level*
  - Promote innovative market-based risk management schemes, such a warehouse receipt system operated by the private sector and commodity market insurance system.
  - Develop community based storage systems and facilities for food and seed (village grain banks and improved granaries).
  - Improve management of the Strategic Grains Reserve to ensure adequate stocks at national level
  - Increase storage capacity at national level by building more regional silos and improving the capacity of the existing silos

### **Focus area 2: Commercial Agriculture, Agro-processing and Market Development**

- *Agricultural exports of different high value commodities*
  - Promote contract farming, out-grower schemes and farmers' organizations (cooperatives)
  - Strengthen farmers' organizations in agri-business management skills, planning, cost-benefit analysis, accounting, input and output handling, grading and packaging and price negotiations.
  - For each commodity, promote dialogue and cooperation between value chain stakeholders including farmers' organizations, traders, processors, exporters, buyers and policy makers.
  - Promote agricultural exports through market research studies, export trade fairs and buyer and seller meetings.
  - Provide improved technologies to enhance output quality and cost-effectiveness in particular for tobacco and cotton and tea bushes, improved macadamia planting material and quality fruit tree seedlings.
  - Improve compliance with market standards (grading, packaging, labelling) by providing training to value-chain stakeholders.
  - Promote quality through compliance with sanitary and phytosanitary standards and improving the capacity of national laboratories to conduct tests on export samples.
  - Increase provision of quality certification and regulatory services to enhance output quality.
- *Agro-processing mainly for value addition and import substitution*
  - Promote group and individual small-scale agro-processing particularly for cassava (starch) horticultural products (fruit juices and jam, tomato paste etc) and oilseed crops for cooking oil
  - Set-up and expand market information systems in key markets and for key commodities;

- Build or rehabilitate market infrastructure and collection points in strategic locations for specific commodities
- Develop financial leverage systems for private agri-business enterprises through the provision of matching grants system
- Encourage adoption of appropriate on/off shore fishing practices, including developing area-specific fishery management plans for Lake Malawi
- Promote mini dairy processing and cooling facilities
- Establish rural mini abattoirs
- Establish organized meet and egg markets
- *Development of public/private partnerships to facilitate a nationwide system of profitable markets for agricultural inputs and outputs*
  - Develop commodity based partnerships in the value chain involving all key players
  - Empower farmers by mobilizing them into organized units such as cooperatives, and through contract farming or out-grower schemes and training to impart skills.
  - Improve farmer knowledge and choice regarding new technologies (enhance agro-dealer skills, implement farmer-based trials etc) as well as being informed on output market potentials and options.

### **Focus area 3: Sustainable Agricultural Land and Water Management**

- Sustainable agricultural land management
- Sustainable agricultural water management and irrigation development
- Sustainable management of the effects of climate change

### **Key support services**

#### Technology Generation and Dissemination

- Results and market oriented research on priority technology needs and provision of technical and regulatory services
  - Develop harvest and post-harvest management systems including crop storage systems
  - Develop value addition technologies to promote agro-processing initiatives
- Efficient farmer-led extension and training services
  - Train farmers on all aspects of GAP

#### Institutional Strengthening and Capacity Building

- Strengthening public management systems
- Capacity building of the public and private sectors

### **Cross cutting issues**

1. HIV prevention and AIDS impact mitigation
2. Gender equality and empowerment

**Annex 5: AWSAP Budget by Focus Area 2008/09 – 2011/12 (US\$ million)**

	<b>2008/ 09</b>	<b>2009/ 10</b>	<b>2010/ 11</b>	<b>2011/ 12</b>	<b>TOTAL</b>	<b>%</b>
<b>I. FOOD AND NUTRITION SECURITY</b>						
1.1 Maize Self-Sufficiency	150.2	154.8	158.0	162.0	625.0	<b>46.9</b>
1.2 Diversification of Food Production at household level	29.1	35.0	40.3	43.6	147.9	<b>11.1</b>
1.3. Dietary diversification for nutrition improvement	17.4	17.5	17.8	17.7	70.4	<b>5.3</b>
1.4. Risk Management for Sustainable Food Availability at National Level	2.4	7.8	2.4	2.8	14.5	<b>1.1</b>
<b>Sub-total</b>	<b>198.1</b>	<b>215.2</b>	<b>218.4</b>	<b>226.1</b>	<b>857.7</b>	<b>64.4</b>
<b>II. AGRI-BUSINESS AND MARKET DEVELOPMENT</b>						
11.1 Agricultural Exports for Improved Balance of Trade and Income	6.7	12.4	17.4	22.8	59.3	<b>4.5</b>
11.2 Agro-processing for Value addition and Import Substitution	24.9	31.9	34.6	38.1	129.5	<b>9.7</b>
<b>Sub-Total</b>	<b>31.6</b>	<b>44.4</b>	<b>52.0</b>	<b>60.9</b>	<b>188.8</b>	<b>14.2</b>
<b>111. SUSTAINABLE LAND AND WATER MANAGEMENT</b>						
111.1 Sustainable Land Management	6.9	10.7	14.6	25.1	57.3	<b>4.3</b>
111.2 Sustainable Water Management and irrigation development	19.2	31.5	31.5	38.5	120.6	<b>9.1</b>
<b>Sub-total</b>	<b>26.1</b>	<b>42.2</b>	<b>46.1</b>	<b>63.5</b>	<b>177.9</b>	<b>13.4</b>
<b>IV. INSTITUTIONAL STRENGTHENING AND CAPACITY BUILDING</b>	<b>29.5</b>	<b>27.6</b>	<b>24.5</b>	<b>24.4</b>	<b>106.0</b>	<b>8.0</b>
<b>TOTAL BUDGET</b>	<b>285.3</b>	<b>329.3</b>	<b>341.1</b>	<b>374.9</b>	<b>1,330.6</b>	<b>100</b>

### Annex 6: Stakeholders swot Analysis Matrix<sup>1</sup>

Institution	Main activities/Role	Strengths	Weaknesses	Opportunities/Threats
<b>A. Ministries and other public institutions (commodity boards/exchanges, chamber of agriculture/commerce, research institutions, extension services, etc.)</b>				
Ministry of Agriculture and Food Security (MOAFS)	<ul style="list-style-type: none"> <li>Attaining and sustaining household food self-sufficiency and to improve the nutritional status of the population</li> <li>Expanding and diversifying agricultural production and exports</li> <li>Supporting the increase farm incomes</li> <li>Generation and dissemination of agricultural information and technologies</li> <li>Monitoring and management of the food security situation</li> <li>Formulation of agricultural policies, legislation and regulations with stakeholder participation, including the ASWAp</li> </ul>	<ul style="list-style-type: none"> <li>Well established structure from HQ to District level</li> <li>Past investment in facilities for the delivery of services to the farmers</li> <li>Staff well trained in several aspects</li> <li>Established system of communication</li> <li>Lead in the formulation of the ASWAp</li> </ul>	<ul style="list-style-type: none"> <li>Poor past record of development effectiveness</li> <li>Over-dependency on donor funding</li> <li>Insufficient public funding for services/ facilities</li> <li>Inadequate coordination of activities in the departments</li> <li>High level of turn-over and attrition mainly due to HIV/AIDS, affects service delivery capability</li> <li>Weak leadership and analytical skills of field staff</li> <li>Gender imbalance in staff and targeting of services</li> <li>Inadequate financial know-how, M&amp;E and accountability</li> <li>Inability to retain staff due to low salaries</li> <li>Reluctance to devolve power and resources under decentralization</li> </ul>	<ul style="list-style-type: none"> <li>Agriculture remains a priority of the government</li> <li>Donors are willing to support MoAFS to implement policies</li> <li>Existence of training institutions for capacity building</li> <li>Tax exemption for agricultural inputs</li> <li>Complementarity and synergy with NGOs and the private sector</li> <li>NGO demand for staff compromises availability</li> </ul>

<sup>1</sup> Adopted from IFAD NRGp appraisal document and reworked

<p>Department of Agricultural Extension Services</p>	<ul style="list-style-type: none"> <li>• Provision of agricultural extension services to farmers, through training and technology dissemination for among others variety selecting, planting, production, harvest and post-harvest</li> </ul>	<ul style="list-style-type: none"> <li>• New demand driven pluralistic extension policy</li> <li>• Experienced staff</li> <li>• Experience in forming and supporting farmer organizations</li> <li>• Gender and HIV/AIDS mainstreaming activities underway</li> </ul>	<ul style="list-style-type: none"> <li>• Shortage of basic resources for extension delivery</li> <li>• Shortages of qualified and trained staff</li> <li>• Lack of staff trained in new demand driven mode of extension service delivery</li> <li>• Weak competence of Subject Matter Specialists</li> <li>• Limited back-up capability to support extension delivery at district level</li> <li>• Weak extension-research linkages</li> <li>• Weak agri-business/marketing extension service</li> <li>• Weak animal production extension services</li> </ul>	<ul style="list-style-type: none"> <li>• Reintroduction of Farm Home Assistance</li> <li>• Resources available to upgrade services with EU support</li> <li>• Need for organizing farmers and training for decentralized structures</li> <li>• Lack of definition between central ministry and district staff</li> <li>• Change required from traditional supply-side extension service delivery approach</li> <li>• Probably service provider</li> </ul>
<p>Ministry of Industry, Trade and Private Sector Development</p>	<ul style="list-style-type: none"> <li>• Create a conducive environment for the growth and development of trade in Malawi.</li> <li>• Facilitate market access for Malawi's exports</li> <li>• Formulate, implement and review industrial policies and legislation</li> <li>• Provide support to the MSME sector</li> <li>• Formulate, implement and review policies and legislation for cooperative development</li> <li>• Promote, train and register cooperatives</li> <li>• Coordination, monitoring and evaluation of the implementation of trade, industry, cooperative and MSMEs policies and</li> </ul>	<ul style="list-style-type: none"> <li>• MITPSD is well positioned as the lead government agency charged with development issues related to SME and MFI sectors</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of adequate funding for operational budget, computers and transport facilities</li> <li>• Lack of adequate/qualified staff at HQ and in the field</li> <li>• Low capacity for effective operation in rural areas</li> <li>• Lack of sufficient SME sector information and capacity for M&amp;E</li> <li>• Slow progress in redrafting and implementing policies and regulations</li> </ul>	<ul style="list-style-type: none"> <li>• Government policy supports increased participation of SMEs and smallholder farmers in commercially viable business enterprises</li> <li>• Significant donor interest and involvement in working with MITPSD towards development of MFIs and SMEs</li> <li>• Clear appreciation of the private sector as engine of growth</li> <li>• Willingness to collaborate with other stakeholders</li> </ul>

	Programmes			
Ministry of Local Government and Rural Development	<ul style="list-style-type: none"> <li>• Key player in the decentralization process</li> </ul>	<ul style="list-style-type: none"> <li>• Key staff positions at central and district level filled with qualified staff</li> <li>• Experience in implementing development projects</li> <li>• Good working relations with other ministries</li> </ul>	<ul style="list-style-type: none"> <li>• Limited operating budget</li> <li>• Limited M&amp;E capacity</li> <li>• Limited experience/understanding of commercial aspects of local development</li> </ul>	<ul style="list-style-type: none"> <li>• Support District Assemblies in facilitating intergovernmental bodies</li> <li>• Main government counterpart of RLEEP</li> </ul>
Ministry of Finance		<ul style="list-style-type: none"> <li>• Qualified and experienced staff for budgetary allocations and disbursement of funds</li> </ul>	<ul style="list-style-type: none"> <li>• Delays in disbursement of funds</li> <li>• Weak monitoring system</li> </ul>	<ul style="list-style-type: none"> <li>• Streamline financial flows and disbursement procedures</li> <li>• Strengthen capacity for effective monitoring</li> <li>• Supportive attitude for more realistic and sustainable</li> </ul>
Small Enterprise Development Organization (SEDOM)	<ul style="list-style-type: none"> <li>• Parastatal under Ministry of Industry and Trade</li> <li>• Provides credit delivery for SMEs involved in manufacturing, services, trading, maintenance, mining, construction, agro-processing and other services</li> </ul>	<ul style="list-style-type: none"> <li>• Good understanding of the dynamics of rural credit situations</li> </ul>	<ul style="list-style-type: none"> <li>• High dependence on government financing</li> <li>• Lack of adequate, qualified and motivated staff</li> <li>• Low loan recovery, weak financial sustainability</li> <li>• No mandate or capacity to mobilize savings</li> <li>• Lack of adequate representation at district levels</li> <li>• Government-driven business operation</li> <li>• High loan default rate among smallholder farmers</li> </ul>	<ul style="list-style-type: none"> <li>• Continued but declining government support</li> <li>• Possible, but limited, source of expertise/advise</li> <li>• Long term financial stability is unsure</li> </ul>
<b>B – Research Institutes, Universities</b>				
Bunda College of Agriculture	<ul style="list-style-type: none"> <li>• Leading agricultural university</li> <li>• Agriculture processing technology development</li> </ul>	<ul style="list-style-type: none"> <li>• Well established curriculum</li> <li>• Fully accredited college</li> <li>• Professional staff, good facilities</li> <li>• Experience in drafting collaborative projects with private sector and Farmers</li> </ul>	<ul style="list-style-type: none"> <li>• Reliant on government subvention for development</li> <li>• Limited commercial knowledge/understanding</li> <li>• Emphasis on theoretical aspects and limited practical training</li> </ul>	<ul style="list-style-type: none"> <li>• Development of suitable curricula for training market oriented smallholder agriculture</li> <li>• Capability of playing an advisory role or as service provider in PPP arrangements</li> <li>• Involvement in technology development, training and</li> </ul>



		Union of Malawi (FUM)		<p>dissemination</p> <ul style="list-style-type: none"> <li>Limited farmer outreach capacity and ability to disseminate technologies</li> </ul>
IITA/SARNETT	•	•	•	•
<b>C. Private sector organizations (traders and their associations, main agribusinesses, transporters, producer organisations and their platforms) Training</b>				
Grade Traders and Processors Association (GTPA)	<ul style="list-style-type: none"> <li>Lobbying and advocacy: to inform and influence government and donors on policies pertaining to food security, specifically grain production and marketing;</li> <li>Capacity building of members</li> <li>Facilitation of access to finance</li> <li>Access to market information</li> <li>Facilitation of trade</li> </ul>			
NASFAM	<ul style="list-style-type: none"> <li>Smallholder-owned membership organisation focussing on a businesslike approach to farming</li> <li>Provide advise on technical support on crop selection and production, training on GAP, access to inputs, filed crop management, harvest and post-harvest management</li> </ul>	<ul style="list-style-type: none"> <li>Well qualified and motivated staff</li> <li>Specific mandate to work with private sector</li> <li>Professional approach to tasks</li> <li>Ability to identify niche sectors and support farmers in exploiting them</li> <li>Sound capability and interest to provide advise and services to smallholder farmers</li> <li>Strong affiliation with farmer groups</li> <li>Experience in harvest and post-harvest management advisory services</li> </ul>	<ul style="list-style-type: none"> <li>Donor funded and maintained with yearly financial budget</li> <li>Uncertainty of sustainability if donors would withdraw</li> <li>Serving specific areas based on the funds available</li> <li>Seen as unfair competitor by the private sector</li> <li>Seen as Equivocal buyer by some farmer groups</li> <li>Caters more for commercial farmers</li> </ul>	<ul style="list-style-type: none"> <li>Government support for diversification of food crops as well as rural incomes</li> <li>Existing involvement in value chain commodities trading</li> <li>Opportunities to extend support to new commodities</li> </ul>
<b>D. Financing institutions (commercial banks, microfinance institutions, private equity funds, risk/guarantee funds, etc.)</b>				

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Commercial banks				
Malawi Rural Finance Corporation (MRFC)		<ul style="list-style-type: none"> <li>• Government financial resources are available</li> <li>• Qualified and motivated staff</li> <li>• Well represented at the District level</li> <li>• Comparatively well management system and loan recovery rate</li> </ul>	<ul style="list-style-type: none"> <li>• High dependency on Government financing and likely future decrease/suspension</li> <li>• Focused on provision of micro credit and weak capacity in non-credit BDS services</li> <li>• No mandate or Capacity to mobilize savings</li> <li>• Government driven business operations</li> <li>• High loan default rate and unlikely financial sustainability</li> </ul>	<ul style="list-style-type: none"> <li>• Reorientation towards sustainable commercial business</li> <li>• Need to sensitize organizations on importance of other non-credit business development services</li> <li>• Possible service/finance provider</li> <li>• Possible source of financing for post-harvest management and value addition activities</li> </ul>

**Annex 7: Donor and Other Stakeholder Investment Projects/ Activities affecting PHL Reduction**

<b>Donor/ Stakeholder</b>	<b>Name of Project + Description of components/activities + Total cost (USD or Euro Million) and/or loan</b>	<b>Status (ongoing/ closed) &amp; Start date/end date</b>	<b>Scope/ Area of intervention (Regional/ national/ local)</b>	<b>Relevance/importance for PHL activities, (including transport development, value addition and marketing</b>
IFAD	<p><b>Rural Livelihoods Support Programme (RLSP)</b> The programme has four main components: (i) keep villagers better informed and encourage their self-motivation; (ii) empower villagers to organize their access to resources and their production in a more effective way; (iii) improve how service providers respond to villagers’ needs; (iv) reduce the hunger gap by investing in production and income-generating activities, to improve the dietary and nutritional status of poor people in the area <u>Total cost:</u> US\$16.6 million IFAD loan: US\$14,8</p>	2004 - 2013		RLSP is a sector wide programme. Opportunities exist to link with the second component, specifically when considering the programme activities related to maize, dairy and livestock production. Possibilities to include/strengthen processing interventions, through trainings and making technologies and equipment more accessible
IFAD, World Bank	<p><b>Irrigation, Rural Livelihoods and Agricultural Development Project (IRLADP)</b> The project will increase the incomes and agricultural productivity of small-scale farmers, by providing farmers with seeds and fertilizer to restore agricultural production. To reduce the risks associated with rainfed farming, the project will also support rehabilitation and development of new irrigation systems, reservoirs and rainwater harvesting structures. Farmers will gain access to support services that will enable them to improve marketing of their produce. The project will also strengthen local government institutions and support capacity-building for farmers and their organizations. <u>Total cost:</u> US\$52.1 million IFAD loan: US\$8.0 million World Bank: IDA: US\$40 million</p>	2006 - 2012		IRLADP’s irrigation activities focus mostly on rice production. Post-harvest losses reduction foreseen in the rice value chain should link with the project to utilize existing and established structures and to build on any ongoing rice post-harvesting, processing and marketing activities. Support services under the project could be expanded to include post-harvest components. Rice has been identified as a priority commodity in this assessment
IFAD	<p><b>Rural Livelihoods and Economic Enhancement Programme (RLEEP)</b></p>	About to start	National	RLEEP initially focuses on 2 main commodities, i.e. ground nuts and Irish potatoes, both of which have been identified in this

	<p>The programme will engage the private sector in providing small-scale crop, livestock and fish producers and processors with the knowledge and skills they need to participate fully in the marketplace. It will strengthen farmers' participation in the market by improving production, transport, storage, processing and marketing systems for commodities focussing initially on groundnuts and Irish potatoes. The goal is to sustainably improve the incomes of economically active poor rural households.</p> <p>Total cost: US\$19.2 million IFAD loan: US\$8.4 million Debt Sustainability Framework Grant: US\$8.3 million Co-financing Netherlands: UD\$0.1 million</p>			<p>assessment. The programme is essentially a commodity-oriented rural commercialisation initiative with two parallel thrusts: (i) development of value chains through participatory processes and matching grants to Public-Private Partnerships (PPPs), consortia, and farmer groups; and (ii) support to smallholder producers to ensure that they become better connected to the value chains and share in the benefits of rural commercial development. This approach offers opportunities to promote improved post-harvest management and product quality improvements along the supply chain</p>
EU (EDF)	<p><b>Farmer Income Diversification Project (FIDP)</b> The specific objectives of this project are to: (i) contribute to and ensure efficient and effective implementation of the programme through capacity building and provision of technical and operational assistance to the nationally managed programme coordination unit and collaborating institutions; and (ii) contribute to and facilitate achievement of increased food security and income levels of rural households, ensuring sustainable use of soil and water resources, and to facilitate business development, employment and improved marketing of agricultural produce.</p>	2007 - 2010		
World Bank	<p><b>Agriculture Development Program Support Project (ADP-SP)</b> The project has two main objectives: (i) institutional development and capacity building in preparation of a Sector Wide Approach (SWAp) in agriculture; and (ii) sustainable food security. The underlying work plan will support the implementation of three priority agendas outlined in the ADP investment framework that relate to the enhancement of food security-maize productivity growth, sustainable land management, and the development of national capacity for market based</p>	2008 - 2013	National	

	risk management. <u>Total cost:</u> US\$47.5 million			
NORAD	<b>Improving the Livelihoods of Malawian Smallholder Farmers</b> The project has four main components related to: (i) farm input sales; (ii) crop production; (iii) agribusiness; and (iv) HIV/AIDS awareness.	closing date Feb 2012	Koranga, Rumphu, Mzimba, Kasunga, Nkhota kota, Mchinji, Ntchisi, Lilongwe, Mangochi, Ntchewu, Balaka, Zomba, Mulanje	

### Annex 8: Current Major Investments in the Agriculture Sector GoM and DPs

Sub-sector	Project	Government Contribution (MK)	Donor Contribution	Starting Date	Closing Date
Crop Production	Smallholder Macademia Development	111,310,052	UA 8,210,000	2001	31/12/2007
	Horticulture and Food Crops Development (ADB)	188,170,282	107,795,205		
	Smallholder Out Grower Sugarcane Production	350,000,000	UA 6,781,535	11/08/2000	31/12/2002
	Promotion of Cotton Production	631,000,000		07/01/2004	30/06/2009
	Wheat Production Enhancement Phase I		-	02/01/2006	31/06/2008
	Institutional Development Across the Agri Food Sector (IDAF)		€7,970,000	01/06/06	31/12/2010
	Establishment of Community Seed Banks		MK27,709,120		
	Mwanza RDP( Institutional Strengthening)	67,142,074			
Livestock Production	Broiler and Layer Management	144,437,050		07/01/2004	31/07/2008
	Livestock Specialist Training	5,550,000		07/01/2006	31/06/008
	Small Stock Development Project	131,700,000		07/01/2006	31/06/2011
	Dairy Development Project	396,000,000		07/01/2006	31/06/2016
	Animal Health Improvement Project	190,509,320		07/01/2006	31/06/2011
Technical Services	Small Farms in the Region of Lake Littoral	\$1,485,449	\$7,415,000		
	Irrigation, Rural Livelihoods and Agriculture Development	US\$ 2,800,000	\$48,000,000	26/05/2006	30/06/2011
	Kapichira Irrigation development	183,311,643			
	Formulation and Legislation of Policy Instruments for Agric. Productivity & Trade	47,247,250		07/01/2006	31/062008
	Up scaling Production of Breeder and Basic Seed and Livestock	715,766,910		07/01/2006	31/062011
	Improvement of Irrigation Infrastructure in Agric. Research Stations	169,335,000		07/01/2006	31/062010
	Farm Income Diversification Programme		€36,500,000		
	Agricultural Regulatory and Advisory Services	317,829,000		07/01/2006	31/062010
Managerial	MASIP	183,124,689	259,886,353		
	IDEEA	58,305,400	53,366,818		
	Construction of Grain Silos	3,300,000,000		07/01/2006	31/062008
	Institutional Strengthening Support to Extension Delivery Systems (ISSEDS)	1,680,600,000		07/01/2006	31/062011
Fisheries	PIAD Fish Farming Project				
	Lake Malawi Artisanal Fisheries Development Project (LMAFDP)				
	Sustainable fisheries for food security (SFFS)				
	Small scale offshore fishery technology project (SOFTDP)				

Source:  
Mo  
AFS  
(2007)

### Annex 9: Analysis of ADB-Financed Country Projects

Project name	Sub-sector	Status of project	Start date	End date	Total cost in UAC	% disbursed	Post-harvest and storage activities	
							Existing (type)	Proposed/ potential
Smallholder Crop Production and Marketing	Irrigation	Ongoing	January 2007	31/12/2012	15,000,000	17	Training over 3000 farmers on post-harvest management Construction of 26 Community Storage Facilities Construction of 14 Market Centres	See section 6.1
Lake Malawi Artisanal Fisheries Development Project	Fisheries	Ongoing	2003	31/12/2009	7,770,000	65.30	17 Fish landing sites are under construction with receiving, processing, storage and related facilities. 10 Ice making plants & 8 chill rooms installations 75 km of access roads improved 100 fisheries staff and over 20,000 community members trained in fish management including post-harvest losses. 110 traders groups to receive loans for ovens, drying racks and insulated boxes	
Horticulture and Food Crops Development Project	Irrigation	Completed	2000	31/12/2008	7,490,000	58	409 staff and over 6000 were trained in various aspects of horticulture including food processing & marketing 11 horticultural marketing centres were under construction at closure of the project. Construction of market depot in Mzuzu was at roofing level	

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Smallholder Irrigation Project	Irrigation	Completed		31/03/2009	5,020,000	100	18 market platforms constructed Over 10,000 farmers trained in various subjects including vegetable processing and storage	
Macadamia Smallholder Development Project	Crop Development	Completed		30/06/2008	6,850,000	63.95	Improvement of access roads 6 storage facilities under construction Capacity building for staff and farmers in macadamia processing and storage	
Smallholder Out grower Sugar Cane Project	Crop Development	Completed		31/12/2009	8,930,000	100	Improvement of access roads 41 km	



**Annex 10: Stakeholders Met**

**ATTENDANCE LIST TO THE LAUNCHING MEETING ON THE 25<sup>TH</sup> AUGUST**

<b>Name</b>	<b>Designation</b>	<b>Organization</b>	<b>Phone</b>	<b>Email</b>
W.D. Chakanika	Executive Secretary	Dwangwa Cane Growers Trust	0888824279	dcgl@malawi.net
Felix Mkumba	Chief Executive	TAMA	0888201899	felixmkumba@tamamalawi.com
Graham Kunimba	Head of Markets and Business Development	TAMA	0888437851	gkunimba@tamamalawi.com
Charles Singano	Scientist	Dept. of Research and Technical Services	0999307474	Chasinga2001@yahoo.co.uk
Ronald Chilumpha	Agribusiness Manager	Chemicals & Marketing	0999619999	rchilumpha@chemicals.co.mw
Professor V.W. Saka	Professor	Bunda College	0888832042	vwsaka@yahoo.com
Samuel Chikapusa	Principal Economist	Min. of Agriculture & Food Security	0888312182	chikapusa@yahoo.co.uk
John Maganga	Quality Control	National Food Reserve Agency (NFRA)	0888225683	jmaganga@nframw.com
George Zimalirana	Director of Planning	Agriculture	0999005488	zimalirana@yahoo.com
Gerald J. Munthali	Secretary	HORTICUM	0999468676	
Pedro Carnillo	Food for Peace	USAID	0999960037	Pcarnillousaid.gov
Boyd Mhango	Operations Officer	Mulli Brothers	0888303099	mullibrothers@Africaonline.net
Maureen Mwawa	Economist	Min. of Agriculture and Food Security	0888328043	Maureenmwawa@yahoo.com
Chris Mbukwa	Economist	Min. of Agriculture and Food Security	0888500775	chrismbukwa@yahoo.co.uk
Charles Kanyinji	Project Coordinator	Smallholder Crop Production and Marketing Project	0888135323	ckanyinji@scmp.org
Victor Mhone	National Coordinator	CISANET		

### CONSULTATION MEETINGS WITH INDIVIDUAL ORGANIZATIONS

Date	Organization	Individuals Met	Position
26 <sup>th</sup> August, 2009	Crop Development Department	Mr. Ngauma	Deputy Director
	Fisheries Department	Dr. Donda	Deputy Director of Fisheries
		Mr. Njaya	Director of Planning
	Research Department (MoAFS)	Mr. Charles Singano	Scientist
	CISANET	Mr. Victor Mhone	National Coordinator
	MACE	Mr. Sydney Khando	Business Development Officer
	Grain Traders and Processors Association	Mr. Paulo Chiziwa	Chief Executive
27 <sup>th</sup> August, 2009	National Food Reserve Agency (NFRA)	Mr. J. Maganga	Quality Controller
		Mr. Peter Salamba	Finance Director
	Cheetah Limited Company	Mr. Sander Donker	Director
	Small Scale Livestock Production Project (SSLPP)	Mr. Bernet Lwara	Program Officer
		Mr. C. Sute Mwakasungula	Executive Director
		Mr. Pat Boland	Field Veterinary Officer
	NASFAM	Mr. Zulu	
		Mr. Alexander Chikapula	Commercial Manager
28 <sup>th</sup> August, 2009	TAMA	Mr. Felix Thole	Head of customer services
		Mr L.D. Chitawo	Director of Finance
	Cassava Processing Mill	Mr. Mwansambo	Foreman
	Ngolowindo Irrigation Scheme	Mr.	Secretariat of Cooperative
	Dwangwa Cane Growers Trust	Mr. Luckson Ngalu	Program Manager

### WRAP UP MEETING

<b>Date</b>	<b>Name</b>	<b>Organization</b>	<b>Position/Dept</b>
<b>28/08/2009</b>	Dr. Ching'oma	MoAFS	Director of Crops
	Mr. Mussa	MoAFS	Director Land Resource
	Dr. Mtukuso	MoAFS	Director Research
	Mr. Mbuka	MoAFS	Economist

### Annex 11: Mission Itinerary

Date	Time	Location	Activity	Organizer
24 <sup>th</sup> August, 2009	15.15 -15.45	ADB	Visit ADB country office	ADB FO
	16.00 – 16.30	FAO	Courtesy Call on FAO Representation	FAO FO
25 <sup>th</sup> August, 2009	08.00 -12.00	Lilongwe (MoAFS)	Mission Launching meeting- MoAFS, CISANET, USAID, NASFAM, NFRA, Bunda College, Chemicals & Marketing, Mulli Brothers, Horticum, SCPMP	MoAFS/ADB & FAO FOs
	14.00 – 15.30	Min of Finance Conference Room	Meeting with MoF & Development Planning & Cooperation	MoAFS, ADB & FAO FOs
26 <sup>th</sup> August, 2009	8.30 -10.00	MoAFS	Meeting with MoAFS Crops Directorate	MoAFS, ADB & FAO FOs
	10.15 -11.45	MoF	Meeting with Ministry of Fisheries	MoAFS ADB & FAO FOs
	13.00- 14.00	CISANET	Meeting with CISANET	MoAFS, ADB & FAO FOs
	14.00 – 15.00	MACE	Meeting with MACE	MoAFS, ADB & FAO FOs
	15.00 – 16.00	GTPA	Meeting with GTPA	MoAFS, ADB & FAO FOs
	16.00 – 17.00	DARS research station	Visit MoAFS DARS	MoAFS, ADB & FAO FOs
27 <sup>th</sup> August, 2009	8.30 – 10.00	NFRA	Meeting with NFRA	MoAFS, ADB & FAO FOs
	10.00 -11.30	Cheetah	Meeting with Cheetah Processors	MoAFS, ADB & FAO FOs
	13.30 -15.00	SSLPP	Meeting with SSLPP	MoAFS, ADB & FAO FOs
	15.00 – 16.30	NASFAM	Meeting with NASFAM	MoAFS, ADB & FAO FOs
28 <sup>th</sup> August, 2009	8.00 - 09.00	TAMA	Meeting with TAMA	MoAFS, ADB & FAO FOs
	09.00 – 10.00	WB	Meeting with WB and WFP	MoAFS, ADB & FAO FOs
	10.00 – 16.00	Field visit - Salima	SCMP maket stalls and Ngolowindo Horticultural Cooperative's fruit juice processing facility in Salima	ADB FO
	16.00 – 17.00	MoAFS Conference Room	Wrap up meeting	MoAFS, ADB & FAO FOs
	17.00 – 18.00	Hotel	FAOR debrief	
	18.00 – 19.00	Hotel	Meeting with SARRNET	
	19.00 – 20.00	Hotel	Dwangwa Cane Growers Trust	
29 <sup>th</sup> August, 2009	07.00 – 08.00	Hotel	IFAD country coordinator	
	11.00	Departure		



# Continental Programme on Post-Harvest Losses (PHL) Reduction

## Rapid Country Needs Assessment

### Malawi

Reduction of post-harvest losses (PHL) is a priority area of collaboration between FAO and the African Development Bank (ADB). It was one of three pillars identified by ADB within its African Food Crisis Response (AFCR) of June 2008, in response to the rise of food prices in 2007 and 2008. In 2009, collaboration between FAO and ADB on PHL reduction was organized along two pillars: (i) screen the ADB agricultural portfolio and sensitize/train ADB staff to improve PHL activities within ongoing and future projects; and (ii) prepare a framework paper for a continental programme on PHL reduction in Sub-Saharan Africa (SSA), based on needs assessments undertaken in 14 African countries. These needs assessments were carried out by FAO's Rural Infrastructure and Agro-Industries Division (AGS) and Investment Centre Division (TCI) through joint field missions undertaken with ADB in six countries (Cameroon, Ghana, Malawi, Mali, Mozambique and Sierra Leone). Additional data were also obtained from ADB and FAO country offices and concerned stakeholders in another eight countries (Chad, Ethiopia, Kenya, Nigeria, Rwanda, Senegal, Uganda and Zambia).

In 2010, six working papers entitled: "Continental Programme on Post-Harvest Losses (PHL) Reduction: Rapid Needs Assessment" were prepared for Cameroon, Ghana, Malawi, Mali, Mozambique and Sierra Leone which analyzed needs and opportunities for investing in PHL reduction in SSA. These reports provided the foundation on which ADB could begin developing its strategy to assist SSA countries in integrating the recommendations provided on key areas for intervention for PHL reduction.

# Malawi

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