Sector Analysis Studies for the Commercial Agriculture for Smallholders and Agribusiness Programme

*Malawi - Country Value Chain and Market Analysis Report*

Submitted to the IMC led EACDS Lot C framework (PO 7468) by LTS International Limited in partnership with Cardno Emerging Markets UK Limited

10 November 2017
## Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>AgDevCo</td>
<td>Africa Agriculture Development Company</td>
</tr>
<tr>
<td>ASWAp</td>
<td>Agriculture Sector Wide Approach</td>
</tr>
<tr>
<td>CASA</td>
<td>Commercial Agriculture for Smallholders and Agribusiness programme</td>
</tr>
<tr>
<td>CBOs</td>
<td>Community Based Organisations</td>
</tr>
<tr>
<td>COMESA</td>
<td>Common Market for East and Southern Africa</td>
</tr>
<tr>
<td>DAHLD</td>
<td>Department of Animal Health and Livestock Development</td>
</tr>
<tr>
<td>DFID</td>
<td>UK Department For International Development</td>
</tr>
<tr>
<td>DHS</td>
<td>Demographic Health Surveys</td>
</tr>
<tr>
<td>FA</td>
<td>Fisheries Association</td>
</tr>
<tr>
<td>FISAM</td>
<td>Fishers Association of Malawi</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GoM</td>
<td>Government of Malawi</td>
</tr>
<tr>
<td>IATI</td>
<td>International Aid Transparency Initiative</td>
</tr>
<tr>
<td>IFC</td>
<td>International Finance Corporation</td>
</tr>
<tr>
<td>ILO</td>
<td>International Labour Organization</td>
</tr>
<tr>
<td>LUANAR</td>
<td>Lilongwe University of Agriculture and Natural Resources</td>
</tr>
<tr>
<td>MGDS</td>
<td>Malawi Growth and Development Strategies</td>
</tr>
<tr>
<td>MICF</td>
<td>Malawi Innovation Challenge Fund</td>
</tr>
<tr>
<td>MoIWD</td>
<td>Ministry of Irrigation and Water Development</td>
</tr>
<tr>
<td>NAC</td>
<td>National Aquaculture Centre</td>
</tr>
<tr>
<td>NAP</td>
<td>National Agricultural Policy</td>
</tr>
<tr>
<td>NASP</td>
<td>National Aquaculture Strategic Plan</td>
</tr>
<tr>
<td>NFAP</td>
<td>National Fisheries and Aquaculture Policy</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-governmental Organisation</td>
</tr>
<tr>
<td>ODA</td>
<td>Official Development Assistance</td>
</tr>
<tr>
<td>PIAM</td>
<td>Poultry Industry Association of Malawi</td>
</tr>
<tr>
<td>SADC</td>
<td>South African Development Community</td>
</tr>
<tr>
<td>ToR</td>
<td>Terms of Reference</td>
</tr>
<tr>
<td>TaD</td>
<td>Tilapia Agriculture Dialogue</td>
</tr>
<tr>
<td>WWF</td>
<td>World Wide Fund for Nature</td>
</tr>
</tbody>
</table>
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Executive Summary

Malawi is a low income country with a high proportion of the population living below the poverty line. Landlocked Malawi suffers a competitive disadvantage in the export market for agricultural products as freight cost to the nearest port at Beira is USD 60/tonne. Hence the economic opportunities for agribusiness investment are to be found in the domestic and immediate regional markets, where this cost disadvantage becomes a barrier to import competition.

Climatic risk for rain-fed crop production is high in Malawi. Droughts can cause catastrophic crop failure and this risk is manifested by extremely high financial return requirements by commercial investors in the sector with almost a total absence of bank funding directed to upstream production. The two value chains, aquaculture and poultry, both have limited direct exposure to these risks (although depend upon food crop inputs) and, therefore, are positioned to attract commercial investment in well-structured businesses serving the local and regional markets.

Aquaculture and poultry keeping require reliable supplies of feedstuffs, usually with high soybean and maize content. Given Malawi's record of food insecurity, sustainable aquaculture and poultry industries will depend on incremental production increases of both ingredients.

**Aquaculture**

There are two medium-sized fish farming businesses operating on Lake Malawi, producing “Chambo” fish for the local and to a much lesser extent, regional markets. Chambo Fisheries Ltd and MALDECO Aquaculture Ltd have grown from small beginnings and are said to be profitable but it has been difficult to translate their experience and performance into an investable model that might attract investors, especially when considering small farmer involvement. An impact investor is considering an early stage proposal for a 600-cage nucleus/out-grower aquaculture business.

<table>
<thead>
<tr>
<th>Constraints</th>
<th>Effects on the poor</th>
<th>Systemic issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor husbandry practices</td>
<td>Limited productivity and, for smallholders</td>
<td>Weak extension services, with limited scale and geographic coverage.</td>
</tr>
<tr>
<td>Limited use of quality fingerlings</td>
<td>Limited productivity and, for smallholders</td>
<td>Commercial market undermined by NGO and Government fingerling supply schemes</td>
</tr>
<tr>
<td>Limited use of quality feed</td>
<td>Limited productivity and, for smallholders</td>
<td>Undeveloped distribution and sales networks for commercial feed products.</td>
</tr>
<tr>
<td>Threat of further damage to Lake Malawi and its fishery</td>
<td>Further catch declines and loss of income; long-term environmental damage and reduced/lost livelihoods for the poor in wetland areas.</td>
<td>Weak regulatory frameworks and lack of standards (e.g. WWF/TAD) application for aquaculture.</td>
</tr>
</tbody>
</table>
There is potential for CASA to support outgrower schemes with some or all of these companies, subject to strict environmental audit and monitoring under the WWF/TAD International Standards for Responsible Tilapia Agriculture due to the highly sensitive nature of the Lake Malawi ecosystem and the high risk of multiple kinds of damage from intensive aquaculture activities. This should also form the basis for full aquaculture policy and regulatory framework development by the GoM.

**Poultry (eggs)**

Table 2 Constraints in the poultry value chain

<table>
<thead>
<tr>
<th>Constraints</th>
<th>Effects on the poor</th>
<th>Systemic Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smallholders are capital constrained</td>
<td>Poor either cannot afford to enter the sector (need birds, sheds, equipment, feed, drugs) or to keep a commercially viable number of hens.</td>
<td>Underdeveloped, risk averse formal financial sector with little capacity to accurately assess risk for small-scale agricultural lending and access this market opportunity. Drug and feed supply business models are designed to serve large-scale buyers</td>
</tr>
<tr>
<td>High prevalence of disease and low productivity</td>
<td>High mortality and low yields limit income; poor husbandry practices raise production costs and limit profitability.</td>
<td>Weak veterinary services that are unavailable to most smallholders Drug supply business models are designed to serve large-scale buyers</td>
</tr>
</tbody>
</table>

Although the selected value chain focused on egg production, a poultry outgrower model would potentially apply equally to broiler production. The intervention proposal in Malawi is essentially replicating a nucleus/outgrower model that has enjoyed success with two of the top three Mozambican poultry producers, who rely heavily on small farmers. Producers are financed to establish poultry housing with water and shade plus working capital for birds, feed and labour for a cycle (5-7 weeks). The poultry nucleus company manages the important vaccinations (whether broilers or layers) without which mortality rates would compromise viability of the small farmer system. The system is commercially viable because the labour cost is low and the capital cost is borne by the farmer so the nucleus company achieves greater through put (broilers or eggs) for a lower capital outlay.

This intervention could be implemented in partnership with the medium-scale company Central Poultry, or larger-scale buyers Charles Stewart or Kapani. There may also be opportunities to work with SMEs such as NASFAM, Proto Feed and Proto Chicks in input credit and distribution schemes for smallholder egg producers.
1. Introduction

1.1 Study Objectives

The Department for International Development (DFID) is in the process of finalising the Commercial Agriculture for Smallholders and Agribusiness programme (CASA). It is envisaged that the programme will have four components: i) Country-level interventions; ii) Global knowledge and policy influencing activities; iii) Smallholder development facility; and iv) Community engagement activities.

The primary objective of this study is to enable DFID to identify the value chains, sub-national regions and stakeholders to form the basis for CASA’s country level interventions (Component 1) and to enable DFID to use this information to develop the Terms of Reference for the implementation of this component of the CASA programme. The studies are expected to:

- Identify two value chains in Sierra Leone, Mozambique, Uganda, Tanzania, Malawi, Myanmar and Nepal which offer the best potential to increase economic opportunities for smallholder farmers.
- Identify potential interventions within the recommended value chains which the programme could make to develop commercial agriculture in line with the CASA objectives and approach. The studies will identify opportunities to:
  - Establish, support or expand smallholder aggregation and access to markets, particularly for poorer farmers, women and those not currently engaged in commercial agriculture.
  - Support SME agribusinesses with significant smallholder supply chains to prepare for and attract early stage investment;
  - Support organisations which bring together stakeholders to advocate for regulatory reform and identify possible reforms which would boost growth in the value chain and increase the ability of smallholders to participate in it.

In addition to conducting sector analysis studies, findings from the studies will be synthesised into an overall recommended scope of activity for CASA in three countries of which one must be defined as a fragile or conflict affected state by DFID and one must be in Asia.¹

The purpose of this Country Sector Analysis Report is to describe selected value chains and detailed rationale for their selection; provide examples of specific opportunities for intervention at the level of smallholder aggregation, supporting agribusinesses to prepare for investment and advancing enabling environment reforms; and describe the existing donor landscape of activities within the value chain.

1.2 Methodology

This Country Sector Analysis Report is largely the result of three weeks fieldwork carried out between 26th August and 1st September, 2017. The majority of the field work was carried out by the Study Country Lead, with support provided by the Core Consultant who also directly participated in the field work between 15th August and 1st September in Malawi.

The subject of the fieldwork, aquaculture and poultry (eggs) value chains, were selected through a desk-based short-listing and scoring process. Firstly a long-list of value chains was prepared based on area grown and value of production. The long-list was assessed using ‘Inclusion Criteria’ to create a short-list (Ref: Value Chain Short-List Report). The short-list was then assessed using a weighted

¹ Terms of Reference: Sector Analysis Studies for the Commercial Agriculture for Smallholders and Agribusiness Programme
scoring matrix (Ref: Short-Listed Value Chain Scoring Report) with the top two ranked value chains selected to undergo detailed fieldwork. The results of the ranking were shared and agreed with DFID Senior Advisors and Country Offices before the fieldwork could take place.

A Research Framework was prepared to guide semi-structured interviews and focus group discussions with key value chain stakeholders during the fieldwork. The Research Framework was reviewed by DFID Senior Advisors and revised accordingly before use in the field.

The fieldwork involved travelling to main production areas and consulting with stakeholders such as:

- Private sector investors, banks, private equity funds, impact investors, DFIs (e.g. CDC), AgDevCo and multinational companies;
- Agribusinesses that are active in the value chain, small and large
- Producer organisations, cooperatives and other organisations representing smallholders in the value chain;
- Key government officials from the Ministry of Agriculture, Ministry of Trade and other relevant ministries
- NGOs and civil society organisations active in the value chain and in supporting smallholder’s access markets
- DFID country office advisers and staff from relevant commercial agriculture programmes
- Other donors are active in commercial agriculture and the proposed value chains

A bibliography of documents reviewed is provided in Annex A and a full list of persons met is included in Annex B. A Review Workshop was held in Lilongwe on 29th August with key value chain stakeholders. The purpose of the workshop was to solicit feedback on the proposed interventions.

1.3 Limitations

The purpose of this Country Value Chain and Market Analysis Report is to provide examples of specific opportunities for intervention at the level of smallholder aggregation, supporting agribusinesses to prepare for investment and advancing enabling environment reforms to boost value chain growth and increase the ability of smallholders to participate in it.

Due to the limited time availability and budget (core consultants spent five days in each country), we had to narrow the scope of the research to two value chains. This decision was based on desk research, and the interests of DFID country offices and CASA focal staff at DFID in the UK. Given the short timeframes and the extensive terms of reference, there was limited scope to adjust these chains once fieldwork was underway.

The fieldwork was conducted over a period of three weeks and focused on a limited number of geographic areas. Selected stakeholder consultations and secondary data sources were utilised to quickly identify possible opportunities for intervention for the CASA programme. Fieldwork review workshops have been conducted to gather stakeholder feedback on the findings and the identified opportunities.

Given the time and resource constraints it was not feasible to undertake detailed design or due diligence on the intervention opportunities identified, hence the recommendations in this report require a feasibility study as a next step. Hence the feasibility study itself is the recommendation rather than intervention per se. Detailed projections of intervention beneficiaries and income changes will also require more detailed design and will not be covered in the scope of this report. It is likely that other entry points and design options could be explored with more time for research and consultation. However, to meet the requirements of the terms of reference some assumption-based calculations have been included, but only where they have been verified as accurate. It is likely that these will be subject to amendment once detailed design work is undertaken.
2. Background

2.1 Economic Outlook

Malawi is the third poorest country in the world with a per capita Gross Domestic Product (GDP) in 2016 of USD300. Agriculture remains the most important sector, employing around 80% of the population\(^2\), contributing 39% of the country’s GDP, and accounting for 87% of foreign exchange earnings from the three main export commodities (tobacco, tea and sugar). Burley tobacco comprises 80% of agricultural exports and 60% of national export value\(^3\). Other important value chains are coffee, groundnuts and macadamia. The sector faces risks related to weak global demand for its agricultural produce, low productivity and high export costs.

<table>
<thead>
<tr>
<th>Table 3 Malawi Economic Strengths and Weaknesses(^4)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strengths</strong></td>
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<tr>
<td>- Natural resources (uranium, rare earths, tobacco, oil)</td>
</tr>
<tr>
<td>- Booming services sector</td>
</tr>
<tr>
<td>- Strong donor support (40% of GDP)</td>
</tr>
<tr>
<td>- Member of SADC (South African Development Community) and COMESA (Common Market for East and Southern Africa)</td>
</tr>
</tbody>
</table>

Agriculture, manufacturing, retail and wholesale trade, information and communication have primarily driven Malawi’s economic growth. Mining and quarrying and real estate are perceived as growth areas\(^5\). Real GDP grew by 5.7% in 2014, but slowed down to 2.5% in 2016 after two consecutive years of drought, which has adversely affected the performance of agriculture. Flooding in southern districts, followed by countrywide drought conditions, caused a decline in agricultural production, including maize, the main staple. As a result, the Malawi Vulnerability Assessment Committee estimated that 6.5 million people would require food assistance.

The major challenge for the Government continues to be balancing its efforts to restore fiscal discipline with its efforts to effectively respond to the need to address Malawi’s food security needs. With persistently large deficits (projected to reach the equivalent of 4.1% of GDP in FY2016/17), Malawi has very limited fiscal space to respond to the crisis.

To date, agricultural growth – which has been volatile and generally failed to keep pace with population increases – has been achieved primarily from factor accumulation (through inputs such as cultivated land and labour) and improvements in output value per hectare. However, given one of the highest population densities in Africa and shrinking farm sizes, these gains are approaching their limit. The country’s reliance upon rain-fed production is prone to price and weather shocks and

\(^{2}\) World Bank data 2015  
\(^{3}\) World Bank and Government of Malawi data 2017  
\(^{4}\) Anon (2016) *Malawi Economic and Trade Overview*, Government of Dubai  
suffers from low productivity. Agricultural institutions and past policy choices have served to exacerbate price volatility and undermine incentives for investment in commercial agriculture.

2.2 Poverty and development

In 2013, 81% of poor rural households consumed fewer than 2,100 kilocalories per capita per day (kcal/person/day), and 65% of all households (and 84% of rural households) reported experiencing food insecurity for at least 1 month per year, a 15 percentage point increase since 2010.\textsuperscript{6}

Poverty has been increasing in rural areas where 85% of the population lives, compared to urban areas where it fell significantly from 25% to 17%. The number of rural poor was estimated as 7,991,532 in 2014.\textsuperscript{7} The majority of the poor remain locked in low productivity subsistence farming.

A World Bank macro-poverty forecast exercise projected that the population living below the international poverty line had not changed between 2010 and 2016 (71% in 2010 to 70% in 2016). However, considering that a significant number of the non-poor in rural areas are highly vulnerable to weather shocks, the poverty rate is, if anything, expected to increase due to the impact of recent floods and drought.

2.3 Agriculture Sector Performance

Agriculture employs 86% of the national workforce and contributes 38% of its GDP and 90% of its export earnings. The main staple is maize, grown by smallholder farmers mostly at the subsistence level. Production varies according to climate conditions and the country moves between maize deficit and surplus years. Sorghum, millet, pulses, root crops, and fruit are also grown. Another staple, as well as an important source of protein, is fish, wild-caught from Lake Malawi or from aquaculture production. The fishing industry accounts for around 200,000 jobs, but problems with pollution and over-fishing have limited yields.

Tobacco is Malawi’s largest cash crop but Government is encouraging diversification. Tea is Malawi’s second most important cash crop, and Malawi is Africa’s second largest producer. In 2000, it accounted for about 10% of exports, or about USD44 million. Sugar is also significant, composing around 6% of exports, or US$27 million.

More than 60% of rural household income is derived from on-farm activities. Women are substantially over-represented in part-time/part-year employment (88% of women and 65% of men). Rural women in waged employment work under less stable conditions than their male counterparts and are over-represented in low paid jobs (61% of female waged workers fall within the lowest wage category compared to 37% of men). Almost twice as many men compared to women participate in activities where wages are relatively higher (35% and 18%, respectively). The use of child labour is common in Malawi\textsuperscript{8}.

2.3.1 Agroecology and land

By the late 1980s, over 56% of Malawian farming households were on holdings of less than 1ha, and a further 20% on 1.0–1.5 ha. A World Bank survey in 2013 estimated average farm size at 1.3ha\textsuperscript{9}. However, their work showed that there was a growing number of farms which had increased in size largely through acquisition of customary land.

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\textsuperscript{7} www.ruralpovertyportal.org/en/country/statistics/tags/malawi
\textsuperscript{8} FAO 2011
\textsuperscript{9} Anseeuw et al (2016) Survey in Kasungu, Lilongwe and Mchinchi Districts
High land pressure leaves little opportunity for fallow and rotation to restore soil fertility and smallholders have expanded their cultivation to marginal, less fertile soils, often on hill slopes that are not suitable for intensive cultivation. This has led to deforestation, soil degradation and erosion. Rain-fed agriculture predominates, dependent on a single rainy season between November and April. Only 10,000 ha of land is currently irrigated, 5% of the potential irrigated area, largely on sugar estates. Other irrigated crops include rice and vegetables.\(^\text{10}\)

Most of the arable land is under a traditional tenure system. Cultivation rights, rather than ownership, are granted by village chiefs through headmen. Matrilineage is common in the centre and south, while patrilineage is common in the north. In the matrilineal system, where the husband leaves his home to live with the wife, cultivation rights are inherited by the wife.\(^\text{11}\)

Malawi has a sub-tropical climate, which is relatively dry and strongly seasonal. The warm-wet season stretches from November to April, during which 95% of the annual precipitation takes place. Annual average rainfall varies from 725mm to 2,500mm with Lilongwe having an average of 900mm, Blantyre 1,127mm, Mzuzu 1,289mm and Zomba 1,433mm. Extreme conditions include the droughts that occurred in 1991/92 season and floods of 1988/89 season. The low-lying areas such as Lower Shire Valley and some localities in Salima and Karonga are more vulnerable to floods than higher grounds. The distribution of agro-ecological zones are presented in Figure 2 below.

A cool, dry winter season is evident from May to August with mean temperatures varying between 17 and 27 degrees Celsius. Frost may occur in isolated areas in June and July. A hot, dry season lasts from September to October with average temperatures varying between 25 and 37 degrees Celsius. Humidity ranges from 50% to 87% for the drier months of September/October and wetter months of January/February respectively.\(^\text{12}\) The growing season ranges from 139 – 267 days.\(^\text{13}\)

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11 http://www.nationsencyclopedia.com/economies/Africa/Malawi-AGRICULTURE.html#ixzz4qWqH8fhm
12 http://metmalawi.com/climate/climate.php
13 FAO Climate Compendium
2.3.2 Agricultural production

Farmers in Malawi mostly use traditional farming methods, with low-yield seed varieties, manual cultivation techniques and little use of agrochemicals. Most smallholders still operate close to subsistence level and their integration into the market is limited. Fertilizer use was estimated at 276,106 tonnes in 2014, including 171,332 tonnes of urea and 70,753 tonnes of NPK.

Tables 4 and 5 summarise output statistics for Malawi’s top five crops and livestock, respectively, in 2014. Table 6 presents productivity data for ten crops in 2014.

Table 4 Crops planted in Malawi by area and production size and value

<table>
<thead>
<tr>
<th>Malawi Value Chains</th>
<th>Area Planted ('000ha or '000 head)</th>
<th>Production ('000 MT)^1</th>
<th>Value ('000 $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cassava</td>
<td>4,026</td>
<td>5,013</td>
<td>1,668,735</td>
</tr>
<tr>
<td>Groundnut</td>
<td>374</td>
<td>296</td>
<td>315,287</td>
</tr>
<tr>
<td>Pigeon Pea</td>
<td>81</td>
<td>335</td>
<td>239,725</td>
</tr>
<tr>
<td>Chicken (eggs)</td>
<td>18,000</td>
<td>n/a</td>
<td>Eggs 390,000</td>
</tr>
<tr>
<td>Soybean</td>
<td>139</td>
<td>121</td>
<td>77,064</td>
</tr>
<tr>
<td>Fresh Vegetables</td>
<td>67</td>
<td>222</td>
<td>21,844</td>
</tr>
<tr>
<td>Tea</td>
<td>17</td>
<td>45</td>
<td>17,939</td>
</tr>
<tr>
<td>Coffee</td>
<td>4</td>
<td>6</td>
<td>3,524</td>
</tr>
<tr>
<td>Fruit</td>
<td>44</td>
<td>226</td>
<td>78,981</td>
</tr>
<tr>
<td>Macadamia</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Dairy</td>
<td>1,317 cattle</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Aquaculture</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Maize</td>
<td>1,676</td>
<td>2,776</td>
<td>626,037</td>
</tr>
</tbody>
</table>

Source: FAOSTAT 2014

Table 5 Number of top five livestock and poultry production 2014^15

^15 FAOStat
<table>
<thead>
<tr>
<th>Number</th>
<th>Production tonnes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goats</td>
<td>5,882,106</td>
</tr>
<tr>
<td>Eggs, hen in shell</td>
<td>24,000</td>
</tr>
<tr>
<td>Pigs</td>
<td>2,711,625</td>
</tr>
<tr>
<td>Meat, chicken</td>
<td>85,973</td>
</tr>
<tr>
<td>Cattle</td>
<td>1,316,799</td>
</tr>
<tr>
<td>Sheep</td>
<td>269,230</td>
</tr>
</tbody>
</table>

Table 6 Productivity and yields

<table>
<thead>
<tr>
<th>Crop</th>
<th>Yield tonnes/ha</th>
<th>Crop</th>
<th>Yield t/ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bananas</td>
<td>26.7</td>
<td>Pigeon peas</td>
<td>4.10</td>
</tr>
<tr>
<td>Cassava</td>
<td>22.5</td>
<td>Potatoes</td>
<td>17.3</td>
</tr>
<tr>
<td>Dry beans</td>
<td>0.57</td>
<td>Soybean</td>
<td>0.87</td>
</tr>
<tr>
<td>Ground nuts</td>
<td>0.79</td>
<td>Sugar cane</td>
<td>108.0</td>
</tr>
<tr>
<td>Maize</td>
<td>1.66</td>
<td>Tobacco</td>
<td>1.03</td>
</tr>
</tbody>
</table>

2.4 Donor Landscape

Official Development Assistance (ODA) disbursements to Malawi have remained relatively stable following a sharp spike in funding in 2006 caused by a rapid increase in debt relief, which increased from US$49m in 2005 to roughly US$2.6bn. In 2015, the total disbursement was US$1.1bn, which represents a 76% increase above 2005 levels. Roughly half of funding to Malawi comes from the thirty OECD-DAC donors. Using the latest CRS figures (2015) the five largest donors are: the United States (US$249m), the World Bank (US$160m), the United Kingdom (US$136m), the Global Fund (US$126m) and the European Union (US$75m).

Figure 2 Official Development Assistance Disbursements Malawi 2005-2012

There has been a solid increase in agricultural aid between 2005 and 2015, with a general trend of OECD-DAC donors delivering more funds than multilateral providers. Like overall disbursements, funding towards agriculture is just as likely to come from the OECD-DAC donors as multilaterals.
There are 551 agricultural projects listed by the International Aid Transparency Initiative (IATI), of which 115 are active.

The IATI listing suggests that donors are making more targeted interventions, such as to improve specific value chains, in response to particular pests or individual aspects of infrastructure. The UK DFID is leading efforts to strengthen key public sector institutions and funds a highly rated M4P programme in the oilseeds sector. Additionally, DFID is funding AgDevCo to stimulate greater cross border trade in Malawi and neighbouring countries. Primarily, the project will work through the Regional Innovative Investments (RIIs) fund to provide project development and patient capital for agribusiness ventures with the potential to substantially stimulate production in multiple countries. The idea is that these investments consolidate the integration of SMEs and smallholders into higher-value more modern regional supply chains, shaping regional market development.
3. Production and Consumption

3.1 Aquaculture Value Chain

There are over 7,000 smallholder aquaculture farmers (80% men and 20% women), and two commercial aquaculture fish producers. The total area under smallholder fish production is 337,216 m², 38% of which is in Mchinji District in the central region of Malawi. Table 7 lists the other active smallholder aquaculture fish production areas.

Table 7 Smallholder Aquaculture Fish Production Areas

<table>
<thead>
<tr>
<th>District</th>
<th>Production Site</th>
<th>Number of Fish Farmers</th>
<th>Area under Fish Farming m²</th>
<th>% Area under Fish Farming</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chitipa</td>
<td>Chisenga Misuku</td>
<td>102 (3 Females)</td>
<td>6,368</td>
<td>2%</td>
</tr>
<tr>
<td>Rumphi</td>
<td>(Ntchenachen and Mphompha)</td>
<td>93 (18 Females)</td>
<td>1,686</td>
<td>5%</td>
</tr>
<tr>
<td>Nkhata Bay</td>
<td>Mpamba</td>
<td>220 (57 Females)</td>
<td>48,830</td>
<td>14%</td>
</tr>
<tr>
<td>Mzimba</td>
<td>(Mzuzu, Kampingo Sibande, Khosolo, Manyamula)</td>
<td>128 (32 Females)</td>
<td>12,764</td>
<td>4%</td>
</tr>
<tr>
<td>Chikwawa</td>
<td>(Kasinthula)</td>
<td>12 (All males)</td>
<td>6,488</td>
<td>2%</td>
</tr>
<tr>
<td>Mlanje</td>
<td>(Chikumbu)</td>
<td>55 (12 Females)</td>
<td>12,364</td>
<td>4%</td>
</tr>
<tr>
<td>Mchinji</td>
<td>Chioshya, Willanji, Kapiri, Chimombo, Nyoka</td>
<td>183 (40 Females)</td>
<td>129,294</td>
<td>38%</td>
</tr>
<tr>
<td>Blantyre</td>
<td>Chilomoni, Chavala</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ntchisi</td>
<td>Kasakula, Nthondo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thyolo</td>
<td>Maonga</td>
<td>18 (3 Females)</td>
<td>3,190</td>
<td>1%</td>
</tr>
<tr>
<td>Machinga/Zomba</td>
<td>Chingale/Chinsee</td>
<td>333 (113 Females)</td>
<td>10,1051</td>
<td>30%</td>
</tr>
<tr>
<td>Mangochi</td>
<td>Mthilamanja, Namwera, Liwalika, Michesi/Nkopola</td>
<td></td>
<td></td>
<td>0%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td>337,216</td>
<td>100%</td>
</tr>
</tbody>
</table>

In 2016, a total of 7,646 tonnes of aquaculture fish were harvested from ponds and cages, produced by smallholder farmers and the commercial sector. It is noted that in comparison to fish ponds, caged fishing provides ease of feeding, stocking and harvesting hence simpler modular expansion. Furthermore, caged fishing provides higher growth rates, lower disease incidence and hence higher survival outturns.

Malawi has two commercial aquaculture fish producers. MALDECO produced 144 tonnes in 2016 and expects to increase this to 500 tonnes in 2017 through improvements made in feeding and increased numbers of fish in cages. Chambo Fisheries Ltd. produces around 1,500 tonnes of fish annually. Thus, in 2016, total commercial aquaculture fish production was 1,644 tonnes with the balance of 6,002 tonnes produced by small-scale producers. It is well documented that aquaculture fish production is increasing very fast while capture fish production is decreasing because of overfishing of Lake Malawi.

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16 Department of Fisheries  
17 GoM 2016b
Five indigenous species – four tilapia and one catfish – are recommended by Government for aquaculture in Malawi. *Oreochromis shiranus* (Makumba), *Tilapia rendalli* (Chilunguni), *Oreochromis karongae* (Chambo), *Oreochromis mossambicus* (Makakana) constitute over 93% of aquaculture production, and *Clarias gariepinus* (Mlamba) composes around 5% of output. Fish yield is approximately 750kg/ha with potential to increase this to 6,000kg/ha using high quality fish fingerlings and improved feed. Exotic species, such as common carp, black bass and trout contribute a further 2%\(^ {18}\). Government policy places restrictions on the introduction and use of exotic fish species, which have higher growth rates than their native counterparts, in Malawi.

### 3.1.1 Constraints in the aquaculture value chain

The Table 8 below summarises the main constraints in the aquaculture value chain, along with their effects and underlying causes.

<table>
<thead>
<tr>
<th>Constraints</th>
<th>Effects on the poor</th>
<th>Systemic issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor husbandry practices</td>
<td>Limited productivity and, therefore, incomes, for smallholders</td>
<td>Weak extension services, with limited scale and geographic coverage</td>
</tr>
<tr>
<td>Limited use of quality fingerlings</td>
<td>Limited productivity and, therefore, incomes, for smallholders</td>
<td>Commercial market undermined by NGO and Government fingerling supply schemes</td>
</tr>
<tr>
<td>Limited use of quality feed</td>
<td>Limited productivity and, therefore, incomes, for smallholders</td>
<td>Undeveloped distribution and sales networks for commercial feed products</td>
</tr>
<tr>
<td>Threat of further damage to Lake Malawi and its fishery</td>
<td>Further catch declines and loss of income; long-term environmental damage and reduced/lost livelihoods for the poor in wetland areas</td>
<td>Weak regulatory frameworks and lack of standards (e.g. WWF/TAD) application for aquaculture</td>
</tr>
</tbody>
</table>

Low productivity hampers the industry. The country has only 38 Government fisheries field assistants with 47% of districts having only one frontline fisheries staff member. Staff from the National Aquaculture Centre (NAC) complement those from the Department of Fisheries but these mostly work with farmers in Zomba. Lilongwe University of Agriculture and Natural Resources (LUANAR) also employs fisheries staff who work with farmers but only in Lilongwe. This creates a big challenge for aquaculture development, especially for fish farmers in the north of the country.

\(^ {18}\) FAO, n.d.
MALDECO and Chambo Fisheries Ltd. produce ample seed stock but there is no effective demand at present. The majority of smallholder producers who use quality fish fingerlings do so with the help of NGOs and Government, reducing incentive for investment, and their limited technical knowledge means that most are unaware of the benefits of using commercially produced, high quality fingerlings.

Agricane and the Phata Outgrowers Sugar Cane Cooperative have been developing a small pond aquaculture project for tilapia (*Oreochromis shiranus*) production, funded by the IDH Dutch Sustainable Trade Initiative, with fingerlings supplied by the hatchery enterprise African Novel Resources.

MALDECO, and a new entrant to the sector, Food and Feeds Wholesalers Ltd. (trading as Kapani), are the only companies producing commercial feed for sale to smallholder farmers. Transport costs make the product unaffordable to all but those located close to sites of production. Chambo produces feed for internal use but states that it has capacity to produce sufficient stocks for sale to any customer.

### 3.2 Poultry (Eggs) Value Chain

Livestock is an important sector for Malawi. It contributes 11% of the GDP with the larger part of it coming from poultry production. Eggs are produced by both smallholder farmers and large commercial producers. There are numerous small scale egg producers and also commercial egg producers. The smallholder egg producers\(^\text{19}\) keep poultry on litter while large scale producers use cages for production of eggs.

In 2013, Malawi produced 436 million chicken eggs in shell\(^\text{20}\). Over two million households produce eggs mostly for home consumption and sell when there is immediate need for cash but could increase production as a cash-generation activity. All the three regions of the country and the following districts have potential for poultry production: Lilongwe rural, Dedza, Ntcheu, Kasungu, Mchinji, Ntchisi, Dowa, Mzimba, Nkhotakota, Machinga, Mangochi, Balaka, Zomba, Blantyre rural, Mwanza, Neno, Phalombe, Chiradzulu, Mulanje, Thyolo, Chikwawa and Nsanje. The advantages of smallholders in poultry production over large-scale producers is the availability of cheap family labour, access to land for free ranging poultry and use of crop waste.

Among the large-scale producers are Malili, Nthanzi, Central Poultry, Donnas Eggs, Ddeeoo and Charles Stewart Ltd. These large-scale egg producers combined keep 5.5 million layers and the industry is growing at 10%/year.

Potential to improve egg production is high through improvements in genetics, nutrition and management and increasing feed production with greater production of maize, soybeans and sunflower beyond the current production levels since they form the core ingredients for poultry feed. Productivity of eggs would also be achieved through improved health from vaccination, treatment and management. Potential for replication, adaptation and adoption of the value chain improvements are high with applicability nationwide in rural and peri-urban centers.

The value chain also has potential for value addition in the form of production of graded and packaged eggs, which commercial producers are already doing, and free-range eggs that only smallholders can produce are increasingly in demand, carrying a 20% price premium.

\(^\text{19}\) Note that CASA’s objective is to generate commercial agriculture opportunities that link smallholders to agribusinesses. Backyard poultry cannot do this because the poultry companies that provide the nucleus services are not interested in supporting backyard poultry

\(^\text{20}\) FAOStat
The employment opportunities created in the egg value chain include: employment of non-professional labour as poultry attendants, technical animal health and production labour, industrial labour in abattoirs and packaging, administrative/managerial labour in farms and industries (in feed processing and poultry production) plus others such as drivers for deliveries of processed products.

Among the key roles in the egg value chain are producers of breeding stock, feed manufacturers, hatcheries, and laboratory testing services. Most of the commercial egg producers perform all these functions in-house. Only smallholder egg producers outsource all the functions with the exception of producing eggs from point of lay chickens. Smallholders buy point of lay chickens, and feed.

### 3.2.1 Constraints in the poultry value chain

Capital is required for purchase of chickens, sheds, equipment and feed. Even well-produced business plans will not persuade banks to lend money without sufficient collateral, something few smallholders have access to. In addition, drugs and feed supply chains are set up to serve large-scale buyers – pack sizes of vaccines, for example, are sufficient for 1,000 birds when most smallholders have fewer than 100. Distribution networks do not reach more remote rural areas. Commercial lenders do not have the capacity to accurately assess the risk of small-scale agribusinesses and require traditional forms of collateral.

Smallholder husbandry knowledge is poor and productivity suffers from high disease burdens and sub-optimal farming practices. Some large-scale producers provide free vaccinations for smallholder stocks around their own plant in order to prevent cross-infection. Technical knowledge for egg production is very difficult for smallholders to access – Malawi has only nine public sector vets, and there are only two training colleges plus the Department of Animal Health and Livestock Development staff in the field.

<table>
<thead>
<tr>
<th>Constraints</th>
<th>Effects on the poor</th>
<th>Systemic issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smallholders are capital constrained</td>
<td>Poor either cannot afford to enter the sector (need birds, sheds, equipment, feed, drugs) or to keep a commercially viable number of hens.</td>
<td>Underdeveloped, risk averse formal financial sector with little capacity to accurately assess risk for small-scale agricultural lending and access this market opportunity. Drug and feed supply business models are designed to serve large-scale buyers</td>
</tr>
<tr>
<td>High prevalence of disease and low productivity</td>
<td>High mortality and low yields limit income; poor husbandry practices raise production costs and limit profitability.</td>
<td>Weak veterinary services that are unavailable to most smallholders Drug supply business models are designed to serve large-scale buyers</td>
</tr>
</tbody>
</table>
4. Development Characteristics

4.1 Gender

Agriculture is considered the engine of Malawi’s economic growth and the main determinant of the country’s livelihood and food security. Over 80% of the country’s overall labour force is employed in agriculture, and of that, 80% are women.\(^{21}\) Women headed-households constitute 23% of all households in Malawi.\(^{22}\)

Even though women predominantly represent farm labour in Malawi, there are a few major challenges that have contributed to the fact that in Malawi female-managed agricultural plots are 25% less productive than male-managed plots. These challenges include:\(^{23}\)

- access to and use of agricultural inputs
- tenure security and related investments in land and improved technologies
- access to markets and credit
- access to human and physical capital
- informal institutional constraints affecting farm/plot management

If intervention efforts focused on these factors, it would contribute towards closing the gender gap in agricultural productivity for Malawi, which would increase the productivity of women farmers and increase the GDP of Malawi. It is projected that closing the gender gap in agricultural productivity has the potential to lift as many as 238,000 people out of poverty in Malawi.\(^{24}\)

4.1.1 Aquaculture

Women play a significant, yet unempowered, role in Malawi aquaculture. They are relatively integrated in all aspects of the value chain, though their participation in leadership positions is limited because men dominate decision-making processes.\(^{25}\) The Government of Malawi has indicated that one of the top priorities in the current National Fisheries Policy framework is to mainstream gender policy on the roles of various players including women in fish processing and marketing along the value chain.\(^{26}\)

A recent study of Malawi fish value chains looked at two typical Malawian fishing communities and found the following gender breakdown by value chain actor:\(^{27}\)

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22. FAO (2011) Gender Inequalities in Rural Employment in Malawi: An Overview. Gender, Equity and Rural Employment Division of FAO
25. Manyungwa-Pasani, Chikondi, Hara, Mafaniso and Chimatiro Sloans (2017) Women’s participation in fish value chains and value chain governance in Malawi: A case of Msaka (Lake Malawi) and Kachulu (Lake Chilwa). Institute of Poverty Land and Agrarian Studies, University of the Western Cape, South Africa
27. Manyungwa-Pasani, Chikondi, Hara, Mafani so and Chimatiro Sloans (2017) Women’s participation in fish value chains and value chain governance in Malawi: A case of Msaka (Lake Malawi) and Kachulu (Lake Chilwa). Institute of Poverty Land and Agrarian Studies, University of the Western Cape, South Africa
Table 10 Percentage of Women Involved in the Fish Value Chain in Malawi

<table>
<thead>
<tr>
<th>Value Chain Actor</th>
<th>Msaka Beach</th>
<th>Kachulu Beach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fishers</td>
<td>5%</td>
<td>7%</td>
</tr>
<tr>
<td>Village Committees</td>
<td>50%</td>
<td>27%</td>
</tr>
<tr>
<td>Local Brokers</td>
<td>67%</td>
<td>67%</td>
</tr>
<tr>
<td>Processors/ Traders</td>
<td>51%</td>
<td>81%</td>
</tr>
<tr>
<td>Transporters</td>
<td>25%</td>
<td>0%</td>
</tr>
<tr>
<td>Exporters</td>
<td>100%</td>
<td>83%</td>
</tr>
</tbody>
</table>

The study findings show that women are relatively integrated in all the activities of the value chain. Men dominate the production segment of the value chain (gear and boat owners and actual fishing), whereas women participate significantly in the fish export market. These findings support the broader trend that over 70 percent of the informal, cross-border trade in the SADC region is undertaken by women.⁸

For Malawian women to successfully and equitably engage in aquaculture ventures, understanding the limitations for women in fisheries and aquaculture, namely lack of ownership in the production process and lack of ability to engage in decision making (input purchasing, aquaculture management and sales), should be considered alongside all other agricultural challenges.

Figure 5 Women Participation in Cage Aquaculture Value Chain²⁹

4.1.2 Poultry

Small scale livestock production is a critical strategy used to diversify and strengthen household income. In Malawi, 61 percent of male-headed households, as compared to 48 percent of female-headed households, own or keep livestock or poultry. Men’s ownership and control of customary land, whether that land is used for grazing or fodder production, is a significant constraint for women farmers, particularly the poor.³⁰ However, rearing poultry is seen as important for women, especially on a household level, because poultry requires significantly fewer inputs and less space.³¹ One study found that most flocks (85 percent) are housed in human dwelling units and scavenging is the main source of feed, with supplementation happening for only a portion of the year. However, typically the selling of local chickens from villages to more urban markets in Malawi, is dominated by male

²⁹ Information from fieldwork
middlemen. For women to thrive as farmers of poultry in a scaled venture, considerations should be made of market, access to capital, ownership of assets, and all other common agricultural challenges experienced by women farmers.

Figure 6 Women Participation in Poultry Value Chain

### 4.2 Nutrition

Food security in Malawi is generally equated with adequate maize production, the country’s main staple crop, which accounts for more than 60 percent of total food production. However, reliable estimates of maize consumption have been shown to be a useful tool for assessing food security. By all measurements, Malawi is considered a food insecure country. Most maize production is rain-fed and highly dependent on annual weather patterns and fertilizer inputs.

According to the most recent 2017 IMF report, between 2004 and 2010, poverty in rural areas of Malawi, where over 83 percent Malawians live, has increased slightly from 56 percent to 57 percent. Extreme poverty increased at a greater rate from 24 percent to 28 percent.

The average consumption of the poor moved farther below the poverty line as well. A large majority, 81 percent, of poor rural households consumed fewer than 2,100 kilocalories per capita per day, the standard benchmark a person needs to lead a healthy life. Moreover, 37 percent of children under five years of age are stunted due to malnutrition. Not surprisingly, in 2013, 65 percent of all households (and 84 percent of rural households) reported experiencing food insecurity for at least one month per year, a 15 percentage point increase since 2010.

### 4.2.1 Aquaculture

Fish play an important role in combating food insecurity, as they are a significant source of protein, vitamins, minerals, and micronutrients for Malawians. Fish provide 28% of the country’s animal protein supply and are critical for the health and nutrition of Malawians, especially for rural communities and those living around lakes. A comprehensive food security and vulnerability analysis found fish to be the most consumed animal protein, with 65% of households stating they consumed fish at least once per week, with an average consumption of 1.8 days per week. Yet, because of

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32 Gondwe, Timothy, et al. (2005) *Marketing system and channels for scavenging local chickens in Lilongwe, Malawi*

33 Information from fieldwork


increasing demand primarily from population growth, declines in catches due to poor management, and increases in costs, the amount of fish consumed is on the decline.\textsuperscript{36}

There has been a decline in commercially valuable fish species, especially the Chambo (Oreochromis spp.), in southern Lake Malawi. Although there might be a lack of reliable and scientifically backed evidence, most experts and experienced fishers concur that productivity of most fish stocks in the area is much below par compared to their productivity about two to three decades ago. This leads to the hypotheses that the fish stocks are generally over-exploited. This trend will continue or their productivity will remain at these depressed levels unless appropriate measures are taken.\textsuperscript{37}

Small-scale aquaculture is vital at household level for food security, improving nutrition and income.\textsuperscript{38} The market for fish, both fresh and dried, is very strong in Malawi. Careful selection of valuable species and a conversion from catch fishing to cage fishing could be a viable way to combat the decreasing natural stocks of fish in Malawi.

4.2.2 Poultry

Poultry plays an important role in the national economies of most developing countries and it plays an equally important role in improving the nutritional status and incomes of many small farmers, especially land-limited communities. Malawi has an annual animal protein consumption of 6.0 kg per capita, which is well below the 12.0 kg average for Africa. This low protein intake causes high maternal mortality and is why over 43 percent of children under the age of 5 who are classified as moderately stunted.\textsuperscript{39}

For many potential reasons, the linkage between household poultry production and meat or egg consumption has not been defined. Typically, in times of hunger, households will sell or exchange their poultry or eggs for staple foods. Additionally, in Malawi, it is common that chickens are in part reserved for participation in socio-cultural ceremonies and gifts.\textsuperscript{40}

Selling livestock is the second most important coping strategy against hunger, only superseded by piecework. Since many households face seasonal hunger period at the same time, more animals are offered for sale during the hunger months, resulting in low prices of animals in the time of most need. In the recent years however, trends have shown that most consumers in Malawi are demanding more of the local chicken breed than the exotic broilers. Local chickens can fetch a higher price, but supply is very limited, especially in more urban areas.\textsuperscript{41}

Taking into consideration the local nutritional context of Malawi, a successful poultry venture should consider leveraging high value breeds and a production and sale cycle that counters the pricing fluctuations of hunger season.

4.3 Climate Change and Environmental Impact

According to the UN’s Human Development 2008 report, the World Bank ranks Malawi as the 12th most exposed country to the effects of climate change. Current climate modelling results suggest that maximum temperature could increase by 0.7°C to 0.8°C, 1.6°C to 2.3°C, and 2.1°C to 3.3°C in the 2020s, 2050s and 2080s, respectively. Although the future annual rainfall pattern does not indicate a

\textsuperscript{36} USAID (2015) \textit{The Importance of Wild Fisheries For Local Food Security: MALAWI}.
\textsuperscript{37} Haraa, Mafaniso and Njaya, Friday. (2016) Between a rock and a hard place: The need for and challenges to implementation of Rights Based Fisheries Management in small-scale fisheries of southern Lake Malawi, University of Western Cape.
\textsuperscript{38} The Government of Malawi (2012) National Fisheries Policy
\textsuperscript{40} Gondwe, Timothy et al. (2007) Local chicken production system in Malawi: Household flock structure, dynamics, management and health
\textsuperscript{41} Gondwe, Timothy, et al. (2005) Marketing system and channels for scavenging local chickens in Lilongwe, Malawi
strong increasing or decreasing trend, it is expected that there will be more rainfall variability in the future.\textsuperscript{42} Also, it has been observed that the number of hot days and hot nights has increased significantly since the 1960s.\textsuperscript{43} This means it will become common to experience extended dry periods, and some areas will reach the heat tolerance threshold of some crops.

Relying on small parcels of densely cultivated land for their livelihoods, rural Malawians are highly vulnerable to the effects of natural disasters such as floods and droughts. Twenty-five percent of the country has experienced drought more than seven times in the last decade. Episodes of drought as well as severe flooding are increasing in frequency, intensity, and unpredictably in Malawi, giving the most vulnerable households inadequate time to recover.\textsuperscript{44}

Climate change is a crosscutting issue, especially in Malawi. Research has shown that temperature shocks severely affect household nutrition, reducing food consumption and daily caloric intake. Effects are more severe for women-headed households.\textsuperscript{45} Diversification, including livestock and fishing, is often considered a key strategy for dealing with climate risks. However, its effectiveness as a coping strategy has shown mixed success.\textsuperscript{46}

Overall, climate change is expected to reduce the nation’s food supply and have major implications for human welfare, harming development efforts across all sectors. The 2016 Malawi Climate Change Management Policy has modelled that direct overall costs will be equivalent to losing at least 5% of the Gross Domestic Product (GDP) each year if no interventions are made.

4.3.1 Aquaculture

In recent years, it is becoming increasingly evident that fish stocks in Lake Malawi are decreasing at a rapid rate. Much of this decline is attributed to overfishing and the use of illegal fishing gear. Understanding the effects of climate change on fish stocks in Malawi is still very new. It is generally understood that declining global biodiversity will continue to impact the structure and function of natural ecosystems, including the provision of natural services such as fisheries. One recent study revealed a positive strong correlation between the annual precipitation and annual Chambo catch trend in Lake Malawi\textsuperscript{47}.

Climate change is expected to decrease the productivity of Malawi’s already declining fisheries, which will continue to negatively impact the livelihoods of fishing communities. Improved fisheries management offers an opportunity to improve production under an uncertain set of conditions but this should be offset against potential environmental risks associated with the introduction of exotic species.\textsuperscript{48} Coping strategies for aquaculture ventures in high-risk areas include ongoing monitoring and assessing risk while promoting aquaculture species, fish strains, and techniques that maximize production and profit during successful cycles.\textsuperscript{49}

There are several important environmental issues associated with cage- and pond-based aquaculture, namely:

\textsuperscript{42} Stevens, Tilele and Madani, Kaveh (2016) Future climate impacts on maize farming and food security in Malawi
\textsuperscript{43} www.trocaire.org/sites/default/files/resources/policy/malawi-climate-change-case-study.pdf
\textsuperscript{44} World Food Programme. Malawi profile
\textsuperscript{45} Asfaw, Solomon and Maggio, Giuseppe (2017) Gender, Weather Shocks and Welfare: Evidence from Malawi. FAO
\textsuperscript{46} Food and Agriculture Organization of the United Nations (2015). Diversification, climate risk and vulnerability to poverty in rural Malawi. Economics and Policy Innovations, EPIC. Policy Brief No.5 for Climate-Smart Agriculture
\textsuperscript{47} Makwinja, R and M’balaka, M (2017) Potential Impact of Climate Change on Lake Malawi Chambo (Oreochromis spp.) Fishery
\textsuperscript{48} The Importance of Wild Fisheries For Local Food Security: MALAWI. USAID
\textsuperscript{49} World Fish Center (2007) The threat to fisheries and aquaculture from climate change.
• Elevated levels of dissolved nutrients (eutrophication) and pollutants such as pesticides, drug and food residues, either from cages or discharged effluents from ponds. This can lead to oxygen depletion, changes to sediment chemistry, changes to phytoplankton, changes to water clarity and algal blooms.

• Escaped non-native species with deleterious effects including biodiversity loss, changes to ecosystem functioning, disease transmission and genetic changes and loss of condition in wild fish

• Other effects, including lake bed shading, underwater noise, artificial lighting, entanglement of wildlife, changes in water flow

Importantly, the Tilapia Aquaculture Dialogue (TAD), through the World Wide Fund for Nature (WWF), has published International Standards for Responsible Tilapia Aquaculture. Although individual smallholders may struggle to achieve the level of the technical capacity required to implement such a standard, outgrower schemes and larger operations should build these practices into production – the environmental threat of even the best aquaculture practices is very real, and Malawi’s wetlands are already heavily damaged and overexploited.

4.3.2 Poultry

Livestock is a much better buffer than crops against extreme weather events such as heat and drought, but there is little knowledge about the temperature range that can be tolerated by existing genotypes of livestock in Africa. However, it has been widely demonstrated that that temperature increases above the thermal comfort zone can induce reduced growth and reproduction rates and higher mortality in all livestock. Additionally, increasing temperatures and increase rains can cause substantial shifts in disease distribution.\(^{50}\)

Rural poultry constitutes over 80% of the total poultry population of Malawi, and 80% of the Malawian population raises and utilizes poultry primarily in rural areas to supplement subsistence agriculture. There are a few different poultry species common throughout the country, mostly indigenous varieties classified by phenotype. The government has attempted to improve local chicken production through cross-breeding with the dual-purpose breed, Black Australorp. The programme struggled because of technical constraints, the complexity of farming systems and the different uses to which farmers put their indigenous poultry, which the cross-breeding programme did not take into account. Additionally, the Black Australorp seems not to adapt well to the harsh village-scavenging environment.

Despite its importance, rural poultry has received little attention in terms of improving its management, productivity and diversity. Several constraints such as Newcastle disease outbreaks, predation, poor housing, feeding and mating systems were identified in earlier studies.\(^ {51}\) For an improved poultry project to be successful, especially in the context of climate change in Malawi, three important strategies that should be considered would be 1) utilizing local, hardy breeds; 2) ensuring regular vaccinations; and 3) managing for heat through improved housing and supplemental feeding and watering.

\(^{50}\) International Union for Conservation of Nature and Natural Resources (2010) Building climate change resilience for African livestock in sub-Saharan Africa. World Initiative for Sustainable Pastoralism (WISP): a program of IUCN

\(^{51}\) Gondwe, Timothy, et al. (2003) Community-Based Promotion of Rural Poultry Diversity, Management, Utilization and Research in Malawi. Department of Animal Science, Bunda College of Agriculture, University of Malawi
5. Market Linkages

5.1 Spatial Commodity Flows

5.1.1 Aquaculture

A total area of 337,216m² is under aquaculture fish farming. About 80% of the area under aquaculture is concentrated in Mchinji district which has 129,294m² especially in the following areas Chioshya, Walilanji, Kapiri, Chimombo, and Nyoka. The second districts with largest concentration of fishing areas is Machinga/Zomba districts which has 101,051m², spread between Chingale/ Chinseu. The other districts under aquaculture in the country are Mangochi (Mthilamanja, Namwera, Liwalika, Michesi/Nkopola), Ntchisi (Kasakula, Nthondo), and Blantyre (Chiromoni, Chavala). Other districts where aquaculture fish farming is taking place are Nkhatabay (Mpamba), Rumphi ((Ntchenachen a and Mphompha), Mzimba ((Mzuzu, Kampingo Sibande, Khosolo, Manyamula), Mulanje ((Chikumbu), Chikwawa (Kasinthula), Chitipa (Chisenga, Misuku), and Thyolo (Maonga).

The existence of the National Aquaculture Centre (NAC) in Zomba might have influenced the concentration of aquaculture activities in Machinga/Zomba, while in Mchinji, the existence of Lilongwe University of Agriculture and Natural Resources and also Department of Fisheries in Lilongwe might have had a positive impact on Mchinji aquaculture activities.

In 2016, a total of 7,646 tonnes of farmed fish were produced by both smallholder farmers and commercial producers. Smallholder farmers produce about 6,000 tonnes from mainly fish ponds. Very limited fish (less than 2 tonnes) are produced by smallholders using cage farming. The main production areas are the Central and Southern Regions. The size of the fish produced is between 100g to 300g. The consumption areas for smallholder aquaculture fish are the local communities surrounding the production areas. The type of customer is often low-income earner who prefers small fish sizes. Most fish are harvested while still small because it is easier for families to share several small fish. Few smallholder fish reach the consumers in the towns because there is high demand for the fish within the production communities. This is especially true for aquaculture production from the lake. Consumers usually prefer fish from the lake. A good example is the fish farming which was

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52 Own Compilation from Data from Fisheries Department, MoAIWD
53 GoM 2016
introduced by Total Land Care in Chia Lagoon in Nkhotakota where aquaculture production by smallholder farmers failed because the consumers preferred the fish from the lake rather than the fish from the ponds which were thought to be “muddy” in smell and taste.

Figure 8 Aquaculture Fish: Spatial Commodity Flows (Areas of Production to Areas of Consumption with Volumes)

The aquaculture fish flows by commercial aquaculture producers is different from the smallholder aquaculture fish flows. Aquaculture fish from commercial producers such as Chambo Fisheries Ltd and MALDECO Aquaculture Ltd is able to reach distant consumers in Lilongwe, Blantyre, Mangochi, most district headquarters, and towns. All of the production is consumed by consumers outside their production areas.
5.1.2 Poultry

Chicken egg production is highly concentrated in the South and Central regions of Malawi (Figure 9). The bulk of the eggs produced are consumed in Malawi; historically there was around 4% exported, however this is now not the case due to bird influenza. The majority of the eggs are consumed in the Lilongwe, the capital city of Malawi, seconded by Blantyre the commercial hub of Malawi, then follows the towns such as Zomba and Mzuzu City, then districts headquarters. The consumption pattern for chicken eggs follows the purchasing power existing in an area, with the areas with high purchasing power being the major consumers.

Figure 9 Poultry Chicken Eggs Spatial Commodity Flows

![Figure 9 Poultry Chicken Eggs Spatial Commodity Flows](image)

<table>
<thead>
<tr>
<th>Location By Region</th>
<th>Proportion of Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>North</td>
<td>15%</td>
</tr>
<tr>
<td>Central</td>
<td>40%</td>
</tr>
<tr>
<td>South</td>
<td>45%</td>
</tr>
</tbody>
</table>

CONSUMPTION AREAS

HEAVY CONSUMPTION AREAS
Lilongwe, Blantyre, Mzuzu, Zomba, Mponela, Mzimba, Karonga, Ntcheu, Mangochi, Mchinji, towns. District Hqrd
436,000,000 eggs/YR

4% eggs used to be exported but now no, due to bird influenza

Source: FAOSTAT, Own field Survey
6. Stakeholder Analysis

6.1 Aquaculture

The key stakeholders in aquaculture and poultry value chains are producers, anchor buyers, Government, financiers, technical support service providers, seed suppliers, and feed manufacturers.

6.1.1 Producers

There are 6,000 smallholder fish farmers engaged in fish farming and two commercial aquaculture fish producers. The major strengths that smallholder farmers have are that they have access to cheap family labour and free customary land (to build ponds) which lowers their production costs compared with large scale commercial producers.

Smallholder farmers face a number of challenges, among them are the use of poor quality fish fingerlings, shortage of quality fingerlings, poor availability of quality feed, lack of modern farming knowledge, and Government restrictions on the use of exotic fish breeds. Commercial farmers buy their fingerlings from approved hatcheries while smallholder farmers buy fingerlings from anywhere or recycle their own. Approved fish fingerling hatcheries are NAC, LUANAR, Aglupenu Investment, Lusangadzi Aquafarm, and Mrs. Chokani.

Demand for improved high quality fish fingerlings is over 35 million per year, against a supply of 21 million fingerlings. However, both MALDECO and Chambo Fisheries Ltd have the capacity to produce 10 million fingerings in a month. This means that lack of quality fingerlings is due to lack of effective demand for fingerlings rather than availability.

MALDECO is the only domestic supplier of commercially formulated fish feed. The majority of smallholder farmers use locally made own feed. Of the three aquaculture smallholder farmers visited during the field visit, two of them used feed they made themselves and only one fish farmer group, the cage fish farming group, use commercially produced feed from MALDECO. The AgriTT project feasibility study on the commercialisation of the feed and fingerling supply chains for the smallholder aquaculture industry in Malawi in 2016 found that consistent procurement and use of commercially formulated feeds was rare and limited to less than 10% of fish farmers. Often, the smallholder farmers who use the commercially made feed do so when there are subsidies or freehand outs provided by the NGO led projects, NAC, and LUANAR.

The AgriTT project did research on the quality of different types of aquaculture feed (imported and local commercial feed). The results showed that Chinese feed achieved good results and locally produced commercial feed performed little better than maize bran. MALDECO despite making its own commercial feed since 2016 is also importing its feed from Zambia. The other commercial feed producer is Chambo Fisheries Ltd which produces the feed for internal use by the company in the production of its table fish and fingerlings.

Cage producers have suffered high theft rates of fish while in the pond and from birds which eat the fish.

Most smallholder farmers lack knowledge of fish farming. This is exacerbated by a shortage of lower level front-line staff in the districts.

54 IMANI (2016) Feasibility Study of the Feed and Fingerling Supply Chains for the Smallholder Aquaculture Industry in Malawi
The Government restriction on growing exotic fish breeds is hampering the development of aquaculture because the Malawi chambo has a low growth rate.

### 6.1.2 Financiers

Financial institutions provide both development and working capital. Local banks are currently not providing funding for aquaculture. The National Bank and other banks are interested in lending where collateral is available. Local banks have not been lending to aquaculture because the sector has often been funded by development partners and Government.

An impact investor is investigating the potential to finance a large scale cage farming start-up business on Lake Malawi. The business plan is for a 600 cage operation, cages being owned by cooperative groups with a nucleus company providing hatchery, feed mill, marketing and technical support.

Most aquaculture smallholder farmers have accessed resources for fish farming though their own savings, family and friends’ donations, development partners and Government through projects and village savings and loans. Village savings and loans are the informal financial sector instruments being promoted by several NGOs whereby individuals form groups and save money which they lend amongst themselves to invest in various businesses.

### 6.1.3 Technical Support Services

Most of the extension services are provided by the value chain players including Government Ministry of Irrigation and Water Development (MoIWD) Department of Fisheries. The Department of Fisheries has 38 fisheries assistants who are scattered throughout the country working with aquaculture farmers. Close to 50% of the districts in the country have one front line field fisheries staff. The results suggest the fisheries staffing is not adequate for large scale development of smallholder aquaculture. Efforts to develop smallholder aquaculture should be accompanied by staff recruitment and development.

Of the 7,646 tonnes of fish produced, 6,002 tonnes are produced by smallholder farmers. Almost all the fish produced by smallholder farmers is sold among households in the local production area community. However, 100% of the fish produced by commercial producers is sold through the formal market. MALDECO has 25 distributors in Blantyre, Kasungu and Lilongwe who sell 80% of the fish produced by MALDECO. In MALDECO itself, the company also has a selling point. Vendors buy fish from MALDECO distributors and in turn they sell the fish direct to households for consumption or the vendors sell the fish in council markets from where the consumers buy the fish. MALDECO and Chambo Fisheries also sell their fish directly to supermarkets and chain stores such as Sana, Chipiku, Food Lovers, Shoprite, and some groceries from where households buy. Chambo Fisheries Ltd sell 70% of their fish through supermarkets and chain stores, while for MALDECO only 20% of the aquaculture fish is sold through supermarkets and chain stores. The fish from MALDECO and Chambo Fisheries Ltd is also sold directly to the hospitality industry.

### 6.2 Poultry

The key stakeholders for poultry chicken egg value chains are producers, anchor buyers, Government, financiers, technical support service providers, seed suppliers, and feed manufacturers.

#### 6.2.1 Producers

There are 6 large commercial producers and several small scale producers (excluding smallholders engaged in backyard poultry). The major strengths that smallholder farmers have are that they have access to cheap family labour and free customary land which lowers their production costs and
makes them to be competitive compared to large scale commercial producers. They also use locally made feed which is also cost effective compared to the use of commercial feed used by commercial producers.

Chicken eggs smallholder farmers do face a number of challenges among them are use of poor quality feed and the few who are able to afford commercial feed, the challenge they face is high cost of feed. The other challenge for smallholder chicken producers is that normally they stock and rear very limited number of chickens of between 100 and 200 chickens. It is very expensive to raise such small quantities of chicken because vaccines which are available are for administering to over 1,000 chickens which means smallholder chicken egg farmers are faced with high costs of production.

Disease outbreak is another challenge. Due to poor resource capacity for buying medication to treat the chickens, most chickens are left to die which contributes to losses.

Lastly, many smallholder farmers also raise local chickens for egg production. Due to poor management and care since they are mostly fed on free range. This reduces egg productivity.

6.2.2 Farming clubs and cooperatives

There are a number of farmer clubs organised by the Poultry Industry Association of Malawi (PIAM). This association also registers farmers and community based organisations (CBOs). A full list of farmers and their contact details is available on request. However, these cover most districts of the country and are summarised in the Table 11 below.

<table>
<thead>
<tr>
<th>District</th>
<th>Types of Groups</th>
<th>Contact Details Available?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balaka</td>
<td>21 Farmers with one contact person</td>
<td>Y</td>
</tr>
<tr>
<td>Blantyre</td>
<td>17 clubs</td>
<td>Y (for some clubs)</td>
</tr>
<tr>
<td>Dedza</td>
<td>2 x IITA Program Groups, 29 x individual farmers with one contact person</td>
<td>Y</td>
</tr>
<tr>
<td>Dowa District (Mponela)</td>
<td>3 x IITA Program Groups</td>
<td>Y</td>
</tr>
<tr>
<td>Karonga</td>
<td>23 x individual farmers with one focal person</td>
<td>Y</td>
</tr>
<tr>
<td>Kasungu</td>
<td>3 x IITA Program Groups</td>
<td>Y</td>
</tr>
<tr>
<td>Lilongwe</td>
<td>Goods for Goods Community Based Organisations, x 6 IITA Farmers x 3</td>
<td>Y</td>
</tr>
<tr>
<td>Mangochi</td>
<td>33 x individual farmers with one focal person</td>
<td>Y</td>
</tr>
</tbody>
</table>

6.2.3 Feed producers

Almost all large scale producers of chicken eggs own feed mills for production of feed for own use and sale. There are also a number of grain millers which sell animal and human foodstuffs (See Table 12). Growing demand for stock-feed has increased demand and prices of maize, soybean and other constituent ingredients. The raw materials are purchased from grain traders buying from both small and larger producers. Experiments with the use of cassava to reduce the demands made on maize production have been undertaken but are not yet commercially viable at scale. The feed is sold at point of production (feed mill outlets) or through agents, such as Peoples Trading Centre (PTC) and Chipiku Stores. A 2005 study into commercial stock feed production in Malawi noted the major problems were scarcity of ingredients, high prices of feed ingredients and lack of equipment for analysis of feed samples and feed ingredients. On the other hand, major problems faced by farmers
wishing to buy feed included poor/low feed quality (42.5%), high prices of feed (25%) and high transport costs (22.5%).

<table>
<thead>
<tr>
<th>Feed Manufacturer</th>
<th>Location</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lenzie Mills</td>
<td>Blantyre</td>
<td>Feed producing arm of Charles Stewart</td>
</tr>
<tr>
<td>Proto feeds</td>
<td>Blantyre</td>
<td>Also markets day old chicks, veterinary drugs and equipment through a network of ProtoShops.</td>
</tr>
<tr>
<td>Transglobe</td>
<td>Blantyre</td>
<td>An agriculture trade and exporting arm of locally based Tayub Corporation. Also processes grains for human consumption.</td>
</tr>
<tr>
<td>CP Feeds</td>
<td>Lilongwe</td>
<td>Feed producing arm of Central Poultry.</td>
</tr>
<tr>
<td>Hua Feng</td>
<td>Blantyre</td>
<td>Chinese farm input and machinery company.</td>
</tr>
<tr>
<td>Ndatani Premier Feeds</td>
<td>Lilongwe</td>
<td>Malawian company selling a range of stock feeds. Participated in a research project on integration of cassava into poultry feed.</td>
</tr>
<tr>
<td>Graintech</td>
<td>Blantyre</td>
<td>Process grains for sale as human and animal feed</td>
</tr>
<tr>
<td>Granite</td>
<td>Blantyre</td>
<td>Smaller Malawian company selling a range of stock feeds.</td>
</tr>
<tr>
<td>Prescorp</td>
<td>Mangochi</td>
<td>Smaller Malawian company selling a range of processed grains.</td>
</tr>
<tr>
<td>Thanzi</td>
<td>Lilongwe</td>
<td>Smaller Malawian company selling a range of processed grains.</td>
</tr>
</tbody>
</table>

Source: PIAM

6.2.4 Anchor Buyers and aggregators

There are no anchor buyers and aggregators for chicken eggs producers. Almost all producers of chicken eggs whether smallholder farmers or commercial chicken egg producers when they produce their eggs, they take the responsibility of finding a buyer as individuals and sell their eggs as individuals. Only Charles Stewart at one point tried it with 30 groups but they found that it was not a sustainable model hence they abandoned it and allowed farmers to sell their eggs anywhere.

6.2.5 Financiers

These provide both development and working capital. Local banks are currently still viewing smallholder chicken egg producers as a risky business to invest in.

Most chicken eggs smallholder farmers have accessed resources for chicken egg production though own savings, family and friends’ donations, development partners and Government through projects and village Savings and Loans (VSL). Village savings and loans are the informal financial sector instruments being promoted by several NGOs whereby individuals form groups and save money which they lend amongst themselves to invest in various businesses.

6.2.6 Technical Support Services

Most of the extension services are provided by the value chain players including Government MoIWD Department of Livestock. The situation is that Government veterinary staffs under Department of Animal Health Industry in the MoAIWD are not adequate for large scale development of smallholder chicken egg production. However, the large scale commercial chicken eggs producers, have adequate in house experts who are responsible for vaccinating and treating the chickens when there is a disease outbreak. They also have world class labs for conducting various tests. Some of the commercial chicken egg producers in collaboration with Department of Animal Health Industry
(DAHI), also do buffer vaccination to chickens owned by smallholders on 30 metre radius area surround is ing their farms to prevent disease outbreak. DAHI also as the responsible Government institution for veterinary services is the major service provider to smallholder farmers for any free vaccinations and treatment of chicken eggs against any disease outbreak. However due to constrained financial resources, often the concerned chicken egg farmers are advised to buy their own medication from any veterinary shop for treating/vaccinating the chickens then the farmers treat the chickens themselves or can ask for advice from a Government veterinary technician in their local area. There are various private veterinary drug stores who service the smallholder chicken egg farmers. However they are almost 100% found in urban or town centres which are very far from smallholder farmers. This distance poses a challenge for smallholder farmers to access poultry medication but also ingredients for making chicken feed for those farmers who can afford. Some of the well-known private livestock shops are the Lilongwe Livestock Centre, Femano, and Jerin Agrivet.

6.3 Financial Performance along the Marketing Chain

The financial performance along the marketing chain is difficult to assess. Most of the stakeholders felt that the information was sensitive. The value chains are very short.

6.3.1 Aquaculture

The key value chain actors are the smallholder fish pond farming farmers, Mchinji Fish Pond farmer, the Chitukuko Fish Processing and Marketing Groups which are doing cage fish farming in Chiweta, Lusangadzi Aquafarm, MALDECO Ltd and Chambo Fisheries Ltd. One smallholder farmer in Mchinji and the Chitukuko Fish Processing and Marketing group which is doing cage fish farming in Chiweta were able to provide more details as contained in Table 13. Generally, the aquaculture fish farming is a profitable business. All the players were able to testify to this even the Cage farming groups which currently seem to face challenges with the cages themselves because there were made of soft wood and also their fishing net was worn out.

The margins along the chain range between 7% to 60%. The highest margin of 60% is realized when the producers sell direct large size chambo fish which weigh close to 1kg each direct to supermarkets. But most of the chambo from aquaculture grow to table fish size of between 150g to 300g and sell at much lower price. The majority of the fish from aquaculture is sold at the farm gate within the communities as such the margins which most smallholder farmers would be able to get would range between 29% to 175%. The aquaculture farmer who realized 175% profit uses his own locally made feed and uses family labour while the one who got 29% uses MALDECO Ltd feed.

<table>
<thead>
<tr>
<th>Variable Item</th>
<th>Mchinji Fish Pond Farmer</th>
<th>Lusangazi Aquafarm</th>
<th>MALDECO Ltd</th>
<th>Chambo Fisheries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MK</td>
<td>MK</td>
<td>MK</td>
<td>MK</td>
</tr>
<tr>
<td>Variable cost/kg or buying price</td>
<td>909.2</td>
<td>1000</td>
<td>2500</td>
<td>2500</td>
</tr>
<tr>
<td>Fish fingerlings</td>
<td>5000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feed</td>
<td>85920</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The source of all this information is from fieldwork undertaken for this study.

Note that data from the Cage Fish farming group was collected but was not comparable as the weight of the fish harvested was not known. They have also experienced high production costs due to poor feed performance, replacing damaged cages and fish loses.
### Selling price/kg farm gate, households (1)

<table>
<thead>
<tr>
<th></th>
<th>2,500</th>
<th>2,800</th>
<th>3,750</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross margin per kg (farm gate direct to households) (1)</td>
<td>1,591</td>
<td>500</td>
<td>300</td>
</tr>
<tr>
<td>Value share percentage (value added * 100/variable cost/kg or buying price) (1)</td>
<td>175%</td>
<td>50%</td>
<td>12%</td>
</tr>
<tr>
<td>Selling price/kg Supermarket (2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross margin per kg (Supermarket sells buying from MALDECO) (2) (i.e. supermarket selling price less buying price)</td>
<td></td>
<td></td>
<td>1,500.00</td>
</tr>
<tr>
<td>Value share percentage (value added*100/variable cost/kg or buying price) (2)</td>
<td></td>
<td></td>
<td>60%</td>
</tr>
<tr>
<td>Gross margin per kg (Supermarkets buying from distributors/traders) (3)</td>
<td></td>
<td></td>
<td>1,200.0</td>
</tr>
<tr>
<td>Value share percentage (Value added * 100/variable cost/kg or buying price) (3)</td>
<td></td>
<td></td>
<td>43%</td>
</tr>
</tbody>
</table>

### 6.3.2 Poultry

Three informal value chain layers exist in the poultry value chain and these are at the producer distribution point, local market area and home selling/grocery marketing point. The margins range between 5% to 30%. Highest margins are enjoyed at the home selling residential areas and grocery marketing where 30% margins are achievable.

#### Table 14 Smallholder Chicken Egg Producer - Egg Margin Analysis along the Chain

<table>
<thead>
<tr>
<th>Distribution Point Marketing Margin (1)</th>
<th>Margin Analysis along the Value Chain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable cost/kg or buying price</td>
<td>65</td>
</tr>
<tr>
<td>Wholesale selling price/egg (MK) (1)</td>
<td>73.33</td>
</tr>
<tr>
<td>Gross margin per egg (MK) (1)</td>
<td>8</td>
</tr>
<tr>
<td>Value share percentage (Value added * 100/variable cost/egg) (1)</td>
<td>13%</td>
</tr>
<tr>
<td>Local Area Market (2)</td>
<td></td>
</tr>
<tr>
<td>Wholesale price per egg in MK (2)</td>
<td>77</td>
</tr>
<tr>
<td>Gross margin per egg (MK) (2)</td>
<td>3.67</td>
</tr>
<tr>
<td>Value share percentage (Value added *100/variable cost/egg) (MK) (2)</td>
<td>5%</td>
</tr>
<tr>
<td>Retail Selling price/egg (MK) (2)</td>
<td>80.00</td>
</tr>
<tr>
<td>Gross margin retail sales (MK)/egg</td>
<td>3.00</td>
</tr>
<tr>
<td>Value share percentage (Value added *100/variable cost/egg) (MK) (2)</td>
<td>5%</td>
</tr>
<tr>
<td>Home Selling/Grocery Marketing Margin (3)</td>
<td></td>
</tr>
<tr>
<td>Selling price/egg (MK) (3)</td>
<td>100</td>
</tr>
<tr>
<td>Gross margin per egg (MK) (3)</td>
<td>23</td>
</tr>
<tr>
<td>Value share percentage (Value added * 100/variable cost/egg) (3)</td>
<td>30%</td>
</tr>
</tbody>
</table>

---

57 Fieldwork
6.4 Market Functions

6.4.1 Transport

Transport availability and cost is not an issue for smallholder aquaculture farmers because they market their fish at the farm gate except for the Find Your Feet NGO aquaculture farmers and Lusangadzi Aquafarm who need transport for buying feed from MALDECO and for selling the fish in Mzuzu after harvest. Find Your Feet aquaculture farmers use public transport to sell their fish in Mzuzu while for buying feed they use SIKU transport for transporting fish feed from MALDECO in Mangochi to Chiweta which is a cheaper transport. They at times use a Find Your Feet vehicle when they are in critical need for feed and Tsiku transport is not available to deliver in good time but it is an expensive option. Lusangadzi Aquafarms and the two commercial aquaculture fish producers use their own refrigerated trucks for transporting fish to the various markets. Often the commercial aquaculture fish producers use their own transport.

Transport availability and cost is not an issue for smallholder chicken egg producers because farmers market their eggs at the farm gate. The vendors who come to buy at wholesale price provide the transport. Most of the vendors transport their eggs on bicycles. The same is true for commercial chicken egg producers. The bicycle vendors are the main buyers of their eggs. Very few vendors use vehicles for transporting eggs to the markets. Some commercial chicken egg producers such as Malili Farms, do use own transport to distribute their eggs to their wholesale customers.

6.4.2 Processing

The majority of the smallholder aquaculture fish is sold unprocessed to the local community. A few smallholder farmers like those facilitated by Find Your Feet sun-dry the fish. The commercial aquaculture fish producers do add value to the fish by packing the fish into sizable packs for retail sale. MALDECO Aquaculture also processes fish into fillets and smoked fish.

The common processing technology in chicken eggs is packing the eggs in chicken trays and wrapping them up with plastic and labels. The majority of smallholder farmers sell their eggs on chicken egg trays without wrapping them up and labelling. Chicken eggs which go in supermarkets are the ones which are sold labelled and well wrapped and these are mostly from commercial chicken egg producers.

6.4.3 Storage

All the smallholder aquaculture fish is sold as soon as the fish is harvested, hence there is no need for storage. Commercial aquaculture fish producers do have good storage facilities including cold rooms and large heavy duty deep freezers.

All the smallholder chicken eggs are sold out as soon they are produced. However when the market is down, the eggs are kept in small warehouses but for a very short period of time.

6.4.4 Exchange

Smallholder aquaculture fish is traded on the day the fish is harvested. Communities are informed in advance about the harvesting date of the fish. Commercial aquaculture fish farms trade on an agreed supply contract, supplemented by ad-hoc sales to established customers.

MALDECO sells the majority of its fish through 25 distributors who take up 70% of its production. The distributors are identified through adverts which are followed by interviews. The remaining 30% of the fish is sold through supermarkets, chain stores and vendors. Vendors buy from distributors. MALDECO sells very little fish through retail outlets. Chambo Fisheries Ltd like MALDECO sell its fish through the 12 agents and other traders.
The most common IT tool used is mobile phones among smallholder fish farmers. This provides a potential access point for business development services and financial services to reach the intended project beneficiaries with information for linking to markets and various services including access to finance.

The smallholder and commercial chicken eggs are traded through spot markets and for commercial producers, they do sell to the supermarkets on confirmed orders which could also be done on weekly or daily basis which is also based on spot markets. The use of IT by SMAEs, smallholder aggregators and other VC actors is good but in eggs marketing, it is rarely used because eggs are readily available and cannot get damaged quickly so urgency for selling is not high to require contacting of customers.

6.5 Intra-Firm Organisation

6.5.1 Horizontal linkages

Aquaculture

The Innovative Fish Farmers Network Trust is an association of smallholder fish farmers, although no formal commercial activity takes place as a group.

Poultry

Currently there are no horizontal linkages taking place among smallholder poultry farmers. Each farmer produces his/her own eggs and sell the eggs individually to local buyers composed of households within the community and the vendors. The few poultry egg farmers who are in groups such as those facilitated by Charles Stewart in Blantyre, and Zomba each group operates independently without any horizontal relationships with other groups. The Poultry Association of Malawi structure does not promote horizontal linkages because of the way the membership is structured. The membership is based on individual members registering with the association. Currently, the association has 3,500 active poultry farmers comprised of farmers who are breeder stock farmers, commercial chicken producers, feed manufacturers, abattoirs, hatcheries and regulatory services who all join on individual basis.

6.5.2 Vertical linkages

Aquaculture

Vertical linkages are occurring at a small scale in both fish farming and poultry. For example, Find Your Feet who provided fish farmers in Chiweta with fish fingerlings, feed, fish cages and aquaculture experts.

Poultry

A good example of vertical linkages is the outgrower scheme being practiced by poultry farmers with Charles Stewart who link with poultry farmers in Zomba, Chiradzulu, and Blantyre. Charles Stewart provides poultry egg farmers with feed, point of lay chickens, training and cages.
7. Finance and Investment

7.1 Farmer Finance
Farmer financing is usually from own savings, donations from relatives and friends, projects and non-governmental organisations. Commercial banks and microfinance institutions are not lending to small scale fish farmers and poultry farmers because they believe these two value chains have often been supported by projects. The banks are however ready to lend to smallholder farmers if the farmers can deliver bankable business plans which show a business case and are viable with collateral. The major challenge is that smallholder farmers lack collateral. Micro lenders do not lend to poultry because the chickens are alive and as such have high risk of failure.

7.2 SMAE Finance
Funding for most SMAEs is a challenge. They are usually funded using informal sources such as own savings, friends and relatives and now the village savings and loans schemes. Access to formal funding is not easy because of lack of collateral. The smallholder poultry chicken eggs and aquaculture value chains face challenges in accessing formal finance. Commercial banks such as National Bank of Malawi have not funded the SMAEs in poultry chicken eggs and aquaculture because they feel that such initiatives are usually well funded by development partners and Government. The bank is however willing to lend to smallholder farmers in the two sectors as long as their investment is viable and is backed by collateral.

7.3 Private Sector Investment
The main private sector investments in aquaculture fish farming are MALDECO Aquaculture Ltd and Chambo Fisheries Ltd, while for poultry egg production, there are many large scale private sector producers and among them are Thanzi Ltd, Speeds, Lafarms, Malili farms, Donas Eggs, Central Poultry, and DDEEOO among others.

Private sector investments are financed using both equity funds and loans. In the case of loans, some private sector companies take loans from commercial banks such as Standard Bank of Malawi, Malawi Innovation Challenge Fund and AgDevCo.

7.3.1 Commercial Banks
Some commercial banks have provided funding to the private sector investment. Notable commercial banks include Standard Bank, National Bank and New Building Society. The major challenge with the commercial banks is the high interest rate at 32% which makes financing costly. In addition, banks view agriculture investment to be a risky sector to lend to and prefer to make short term loans which are backed by collateral.

7.3.2 Malawi Innovation Challenge Fund
The Malawi Innovation Challenge Fund (MICF) is a £11 million competitive, transparent funding mechanism that provides grant finance for innovative projects proposed by the private sector active in Malawi’s agricultural, manufacturing and logistics sectors. The fund is supported by the United Nations Development Programme (UNDP), UK Aid and KFW. The MICF is designed to be a quick, responsive mechanism that is not overly bureaucratic and understands the needs of the private sector.
The fund used to have four windows: manufacturing and logistics, agribusiness, manufacturing and agriculture. The manufacturing and agriculture windows closed leaving only the agribusiness and manufacturing and logistics.

The MICF funds applications for both the agribusiness and manufacturing and logistics windows which are led by a for-profit private sector firm but implementation could be supported by other organizations including other private sector companies, NGOs, and other civil society organizations. The projects have to be innovative, demonstrate the potential for commercial sustainability, have potential for growth and replication, are realistic and feasible, and, most importantly, should have a significant impact on the poor. Some private sector companies in the poultry chicken eggs sector have already benefitted from the fund.

7.3.3 AgDevCo

AgDevCo is funded by DFID. It offers long-term, flexible risk capital, which is structured to help early-stage businesses reach profitability and scale. It offers long-term debt (typically 5 to 10 years) and equity, with investments ranging in size from USD0.25 to USD10 million. It can provide grants to help establish sustainable smallholder farmer outgrower schemes. Its sister facility, the Lending for African Farming Company, offers seasonal credit of up to USD4 million.

Its investment funds aim at making an impact on agricultural growth rates, and a reduction in the local/national population living on less than $1.25 per day through identification of a new farm to invest in and provides business development services. Its major output is development of a sustainable agribusiness enterprise with better governance and local contacts and job creation through smallholders having increased access to improved inputs and linkage to markets. The investment results in leveraging additional investment, expanded supply chain, increased household incomes, increased employees on the new farm and immediate supply chain.

In September 2017, AgDevCo announced a USD1.8m, seven-year debt investment into Malawian poultry operator, Kapani. Kapani is expanding its poultry production and processing capacity to meet growing customer demand for quality meat products. The company will expand its cold chain infrastructure and build a modern processing unit.

Kapani will also establish a buying programme from local farmers, providing training and a reliable market. The outreach programme will work with up to 1,000 small-scale chicken producers under contract. Kapani will buy and process the chickens and sell them under a new brand targeting the value segment.

7.4 Government and Donor Investment

Donor investment specifically in aquaculture and egg production is very limited at present. NORAD and GIZ have or intend to support aquaculture development in the country.

7.4.1 NORAD

NORAD through the Development Fund of Norway has supported aquaculture activities indirectly through small components of some of its livelihoods projects. One such support has been through Find Your Feet in Mzuzu which has been working with some smallholder farmers on fish pond farming in Mhuju, Nkhata Bay youth club and cage fish farming in Chitukuko. Fish Farming and Processing Group in Chiweta supported fish farmers with fishing gear in Nkhata Bay. The project started in 2014 and will close in 2019.

Through the same development fund, under the Management for Adaptation to Climate Change Project (2014-2019), Total Land Care was supported to develop fish pond farming and cage fish
farmering in Chia Lagoon in Nkhotakota, but the initiative was not successful because of theft and damage of cages by crocodile. It also supported construction of a fish market structure and fish value addition.

Another NORAD project which supported fish development is the Lake Chirwa Project which started in 2011 and ended in 2016. It supported value addition for matemba fish using solar driers, and also supported the packaging of fish.

7.4.2 GIZ

GIZ through One World No Hunger which is a flagship programme for the German Government has a funding window for smaller specific projects like aquaculture. GIZ plans to invest in aquaculture through a project starting from January 2018, funded with Euro 5 million for 4-5 years. GIZ investment is focused on pond-only aquaculture and not necessarily commercial. GIZ has stated its willingness to share results.

The hypothesis for the project design is that fish production through aquaculture and its marketing can be sustainably improved because of the diverse capacities of the individual actors’ investment potential. The assumption is that support through capacity building to fish farmers, input providers such as fish fingerling (seed) producers and fish feed producers will improve production and productivity of aquaculture. The approach will entail introduction of new forms of producer organizations (groups, clubs, associations, etc.) and marketing pathways (such as inclusive business models) to not only provide sources of income but also increase the efficiency and quality of the sector, which is knowledge-intensive. The project will be attached to the ongoing MIERA (More Income and Employment in Rural Areas) of GIZ, which is implementing the value chain approach in other agricultural sectors.

If approved for funding by BMZ, the project will commence in mid-2017. The program will therefore focus on pond farmers with experience/ponds (cage farming at the lake might be considered). It will support improved aquaculture practices and forming/strengthening of groups/associations. It will also have cooperation with fingerling and fish feed producers. The fish to be produced from aquaculture development will mainly target the local rural market at the beginning of the interventions.

7.4.3 Government Funding

Apart from funding, Government has land for aquaculture investment which potential investors could take advantage of at Kasinthula Research Station. The Kasinthula Research Centre is located south of Chikwawa town, it has 280 hectares of land of which only 11 hectares was developed for research using earthen ponds. The area was at one point leased out to the private sector but the investor left. It has capacity to produce a significant tonnage of tilapia, catfish and carp. The climatic conditions are possibly the best growing conditions for indigenous species and therefore has significant potential for aquaculture development.
8. Enabling Environment

8.1 Government Institutions, Policy, Strategy and Programmes

The Malawi Growth and Development Strategy II (MGDS II, 2011-2016) was the second medium term national development strategy aimed at contributing to attainment of the nation’s Vision 2020. It targeted agriculture as the driver of economic growth and recognizes that food security is a prerequisite for wealth creation. It noted that “In Malawi, much attention has always been geared towards increasing volume of output whilst there have been few attempts by policy makers to change the terms of inclusion in downstream value chains”.

In 2010, the Government developed the Agriculture Sector Wide Approach (ASWAp), Malawi’s prioritised and harmonised development agenda for the agriculture sector covering the period 2010-2015 with the aim of contributing to food security and agricultural growth. The ASWAp was developed in line with the Malawi Growth and Development Strategies (MDGS), and the regional frameworks such as NEPAD and CAADP, which had an annual agricultural growth target of 6% by 2015. The December 2015 ASWAp review concluded that outcome level targets of the Results Framework were not achieved although “good progress” had been made. The GoM plans to develop another ASWAp based upon the review’s lessons.

The policy environment is favourable for the development of the aquaculture and poultry value chains. Both are priority value chains in the National Agriculture Policy (NAP).

The NAP is anchored on the spirit of inclusiveness and coordinated partnerships. It provides clear and comprehensive policy guidance in agriculture for achieving transformation of the agriculture sector through increasing production, productivity, and real farm incomes. The NAP recognises the principal responsibility of agriculture being to produce sufficient diverse and nutritious foods, provide reliable food markets, and increase agricultural incomes through the commercialisation of agriculture. Commercialising smallholder farmers is thus the principal focus of NAP in order to optimise resources under the smallholder sub-sector by promoting pro-poor linkages between large scale estates and smallholder farmers.

The NAP is designed to transform the lives of ordinary Malawians especially smallholder farmers by shifting their economic activities from being strongly subsistence-oriented towards more specialized and market-oriented production through addressing current challenges such as low agricultural productivity, susceptibility to weather shocks, and poor management of land, water, and soils; and attending to future challenges such as a growing population, increased land pressure, and climate change facing the agriculture. The NAP also recognises that for a very long time Malawi has over-concentrated on maize self-sufficiency for food and tobacco as a cash crop, at the expense of other agricultural commodities, including livestock and fisheries. As such the NAP identified some priority value chains on which to focus its efforts. Both aquaculture and poultry value chains are among the priority value chains for the NAP. The NAP is aligned to Malawi’s Vision 2020 and the Malawi Growth and Development Strategy II, which are the overarching long-term and medium-term development strategies, respectively. At the sector level, the NAP was formulated in line with and based on, the experience of Agriculture Sector Wide Approach (ASWAp), which is a harmonised investment framework through which development partners pool resources to support the sector. At the regional scale, the NAP is designed to align with the Malawi Growth and Development Strategy II (MGDS II).

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and international level, the NAP is aligned with several international agreements and protocols on agriculture, including, CAADP; the New Alliance for Food Security and Nutrition; and the regional commitments under SADC and the COMESA. The CASA program, which also aims at commercializing smallholder farmers through agribusinesses that link smallholder farmers to markets is therefore in line with the NAP principles.

In terms of the policy framework governing the selected two value chains for the CASA studies, starting with aquaculture, the mandate, policies and strategies of the Ministry of Agriculture Irrigation and Water Development Fisheries Department is provided for within the National Fisheries and Aquaculture Policy (NFAP). The goal of the policy is to promote sustainable fisheries utilisation and aquaculture development in order to contribute to food and nutrition security and economic growth of the country. Among the anticipated policy outcomes when fully implemented are (i) enhanced capacity to sustainably manage and develop fisheries and aquaculture in Malawi, (ii) increased fish consumption for Malawians; (iii) increased decent employment opportunities in the fisheries and other related sectors, and (iv) increased earnings for people and government from fish exports and domestic trade.

The main objective of the NFAP is to increase fisheries and aquaculture productivity for accessible nutritious food and increased contribution to economic growth. The policy life runs from 2016 to 2021 and has nine specific objectives aimed at increasing annual fish production, small and large scale aquaculture production; strengthening participatory fisheries management regimes; reducing fish post-harvest losses; increasing annual fish exports; increasing per capita fish consumption; improving decent employment in fishing communities for youth, women and men and to reduce the number of child labourers, promoting applied research in fisheries and aquaculture and monitoring the impact of pollution and environmental changes including climate change; and developing the capacity of the Government and local management institutions to serve the industry.

The policy has seven priority areas and among them is the development of aquaculture. Aquaculture has mainly focused on farming fish in fish ponds, cages and tanks. The national aim for fisheries and aquaculture for Malawi is to improve the social economic status of fishing communities and maximizing the benefits the country can derive from responsible use of the aquatic resources. The goal of aquaculture fish farming is to increase and sustain fish production from smallholder and large fish farming operations in order to improve fish supply in Malawi.

The mission statement for the Department of Animal Health and Livestock Development is to promote livestock production so as to achieve self-sufficiency in animal products and export the surplus while at the same time contributing to the welfare of Malawians by providing income generating activities through livestock farming. The national aim for poultry value chain is to promote the use of commercial breeds for egg production. The strategies used by DAHLD to achieve this objective are:

- Expansion and improvement of poultry production in order to increase the availability of poultry and poultry products.
- Register all hatcheries, producers and traders for monitoring purposes.
- Promote local production of parent stock of commercial strains.
- Promote production of indigenous and black Austrolorp chickens.

### 8.2 Market Government Institutions, Policy, Strategy and Programmes

The Government of Malawi has a long history of intervening in the agricultural markets especially for maize because it is an important food security crop. In the aquaculture value chain the Government market interventions are in the form of restrictions on the importation of exotic fish, while in the poultry chain the restrictions are for the importation of poultry and poultry products. The restrictions
are aimed at protecting the indigenous species of aquaculture fish value while for the poultry industry, the import restrictions are aimed at stimulating the development of the local industry by protecting the poultry industry from dumping of cheap poultry products on the market, which would compromise the financial viability of the local poultry industry. The restrictions on the importation of the poultry products require one to get an import permit from the Ministry of Trade Industry and Private Sector Development before an import is made with the aim of assessing whether the importation is indeed necessary or it might result in dumping of the products on the market which would adversely affect the local poultry industry.

However, since import restrictions are not sustainable, Malawi needs to ensure development of regionally competitive value chains in free markets. The aquaculture value chain stakeholders would like lifting of the restrictions on the importation and use of exotic fish species because the exotic fish species have faster growth rates which would lead to increased productivity of fish farming. In the case of poultry, stakeholders are happy with the restrictions but the only concern is on the way the import permits are handled. In Malawi, the import permits are issued by a single person. The stakeholders’ preference is to have import permits issued by a committee rather than an individual officer to avoid bias.

Since the early 2000s, the government of Malawi has used trade restrictions, export bans in particular, to control trade flows for maize and soya, among other crops. Maize export bans, justified in the name of national food security, have been in place more or less continuously since 2005, with the ban lifted temporarily in 2007-08 and 2009-11. Export bans on soya, used to benefit domestic vegetable oil processors and the poultry industry in the form of lower input prices, were imposed several times for a few months at a time between 2010 and 2012. In 2013, government scrapped soya export bans as a trade policy tool, but since 2015 has explored other measures to limit soya exports, including an export levy and a mandate that all soya exports be processed through a single trading company.

The implication of this is that soya meal remains cheap for poultry feed producers (and, therefore, poultry producers) while farmers receive lower prices than would be the case if export markets could be fully developed.

8.3 Regulatory Framework

Regulatory framework and scope for reforms which would benefit aquaculture value chain are provided for by the Fisheries Act 1997, Fisheries Regulations 2000, National Aquaculture Strategic Plan (NASP 2005) and Fisheries and Aquaculture Policy 2016.

The regulatory framework governing the trading of aquaculture fish and poultry is the Control of Goods Act (CAP.18.08). The act gives powers to the Minister of Industry and Trade to intervene in the market.

It can therefore be concluded that the policy environment for aquaculture development is favourable to the develop of aquaculture in Malawi. For poultry, the same CAP. 18.08 empowers the Minister of Industry and Trade, to intervene in the poultry market through the use of import permits.

8.4 Infrastructure and Utilities

Malawi’s infrastructure requires some attention. Road and rail networks are not in good condition and they are inadequate. Though there has been an expansion in the road network by 44% since independence in 1964, the roads are still not adequate. There is a road network of 28,394 kilometers (17,647 miles) but only 5,833 kilometers (3,265 miles) are paved representing 19% of the total. The
The poor condition of the roads has led to Malawi having the worst road accident rates in the world despite having a very low car-to-person ratio of 2 cars per 1,000 people.

The rail network is also in a bad state partly due to Mozambique’s civil war in the 1980s and 1990s, which closed off Malawi’s access to the Indian Ocean via Nacala and Beira ports. Some improvements to the railway are however taking place. The rail and the sea routes through Nacala and Beira provide the cheapest mode of transport for Malawi’s exports and imports. Its bad state has contributed to high transportation costs using the Northern Corridor via Dar es Salaam.

The country has two international airports, these are Lilongwe International Airport and Chileka Airport in Blantyre which are mainly served by South African Airways, Kenyan Airways, Ethiopian Airlines and Malawian Airlines formerly known as Air Malawi.

Malawi’s main sources of energy are wood fuel (firewood, charcoal), electricity and coal. Wood fuel provides about 90% of all its energy needs of which about 44% comes from non-sustainable sources. Demand for energy is growing too, at a rate 6% per year, placing severe pressure on Malawi’s already depleted forests. Electricity generation comes mostly from four hydro-electric power stations on the Shire River and also Wolvwe. The low water levels in the Shire river and problems of siltation often make power supplies unreliable, a problem particularly damaging to industry. Coal is also another source of energy with most of the coal that is used produced locally but sometimes it is supplemented by imports. Another source of energy is petroleum which is all imported.

Telecommunications is also an underdeveloped sector but there have been a lot of developments recently. By 2016, about 2% of Malawi’s population had access to fixed land line telephony, 7% of the population had access to internet while 38% had access to mobile SIM services.

8.5 Advocacy for Reform

8.5.1 Poultry

The Poultry Industry Association of Malawi (PIAM) is the industry representative body in the country, where all major producers are members. The main current issue is the maintenance of the import ban on poultry meat: The recent outbreak of Asian Influenza has caused African governments to protect their industries by banning imports of poultry products. Malawi has had an import ban for 15 years already to protect its domestic industry so these two factors create an impenetrable barrier to competition from the major international producing nations, especially Brazil. It is unlikely that this ban will be lifted in Malawi but that should not prevent maintaining pressure to keep it in force as it is a key driver of prices and hence financial viability.

PIAM is implementing a “Buy Malawi” campaign to counter the illegal imports of frozen chicken as the Government restrictions are not effective.

8.5.2 Aquaculture

Malawi has 14 fisheries associations (FAs), elected to assume a key role in fisheries development and management over larger areas of water bodies and to be the interface between fishing communities and the Government.

Despite having been promoted by the Government, and receiving training support from the EU for resource management, governance and business management, the FAs still experience challenges,

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50 www.nationsencyclopedia.com/economies/Africa/Malawi-INFRASTRUCTURE-POWER-AND-COMMUNICATIONS.html
especially in identifying financial mechanisms to sustain and maximise the economic benefits from the nation’s wild and small-scale farm fisheries.

Commercial operators on Lake Malawi formed the Fishers Association of Malawi (FISAM) as the industry body to interface with Government. FISAM will be the appropriate body to advocate for changes in the industry regulations and reforms as the industry grows.
9. Potential Interventions

9.1 Value Chain 1: Sustainable Aquaculture

9.1.1 Linking Smallholders with Markets and Agribusinesses

Table 15 Potential SME Partners in the Aquaculture Value Chain

<table>
<thead>
<tr>
<th>Company</th>
<th>Core business</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chambo Fisheries Ltd.</td>
<td>Hatchery, grow-out, (feed for own use)</td>
<td>Medium-sized aquaculture firm. Profitable but struggling to attract investment</td>
</tr>
<tr>
<td>MALDECO Aquaculture Ltd.</td>
<td>Hatchery, feed, grow-out</td>
<td>Medium-sized aquaculture firm. Profitable but struggling to attract investment</td>
</tr>
<tr>
<td>African Novel Resources Ltd.</td>
<td>Potential hatchery, out-grower scheme for grow out</td>
<td>Funding outgrower scheme trial.</td>
</tr>
<tr>
<td>Kapani Ltd.</td>
<td>Feed</td>
<td>New entrant, Food and Feeds Wholesalers Ltd. Trades as Kapani.</td>
</tr>
</tbody>
</table>

There are several options (see above) for potential partners, who are capable of supplying smallholders with high quality fingerlings, feed and technical support, addressing the main production constraints in the sector, and providing a ready market for outputs in an outgrower arrangement (see below).

9.1.2 Supporting Agribusiness to Prepare for Investment

An impact investor is considering an early stage proposal for a 128 cage Phase 1 of a planned 600-cage nucleus/outgrower aquaculture business in Lake Malawi. Cages (fish are confined for easy feeding, monitoring, harvesting and for other management purposes) would be owned or leased, and operated by, community farmer groups with the “nucleus” company providing feedstuff from a feedmill operation (with locally sourced ingredients bought in from participating outgrowers), technical assistance and the route to market with a cold chain, packaging, branding and distribution services. The project sponsor is African Novel Resources (ANR), a company registered in Malawi in 2007.

The assumption is that the hatchery would remain independently owned and operated providing fingerlings to all interested parties, but prioritising the Newco. Regular supplies of fingerlings are being made to the Phata outgrower aquaculture scheme already.

CASA support for an such an outgrower model may also be of interest to Chambo and MALDECO – in its offer of technical support, the programme must be careful so as not to skew the market by favouring any one enterprise over others. However, this proposal is lacking a concrete sustainability plan. Given its potential scale and the sensitivity of Lake Malawi’s already polluted and overexploited status, there is a high risk of further environmental damage (and reputational damage to CASA and DFID) we strongly recommend that any scheme should adopt the WWF/TAD International Standards for Responsible Tilapia Production. This standard includes seven principles with associated criteria that is to be complied with: (1) obey the law and comply with national and local regulations; (2) manage the farm site to conserve natural habitat and local biodiversity; (3) conserve water resources;
(4) conserve species diversity and populations; (5) use resources responsibly, manage health and welfare in an environmentally responsible manner; (6) manage fish health and welfare in an environmentally responsible manner and (7) be socially responsible. As mentioned, although individual smallholders may struggle to achieve the level of the technical capacity required to implement such a standard, outgrower schemes and larger operations should build these practices into production. These associated operational costs would be considered in a feasibility study to design the operational model and financial plan for a pilot study.

In addition, CASA should work with programme partners to advocate for gender-balanced implementation of such schemes – for example, companies should ensure equal opportunities of male and female cage ownership, access to inputs, and to output markets. Support to aspects of the value chain that have greater female participation such as processing and marketing also offers potential for women's economic empowerment.

9.1.3 Enabling Environment

Malawi has 14 fisheries associations (FAs) to represent small scale fish farmers and wild catch fishermen. Commercial fish farming, including cage aquaculture, is represented by its own industry body, FISAM. If cage aquaculture expands on Lake Malawi then there will be a need to strengthen and expand the activities of both FISAM and the FAs, especially in the areas of water resource management such that the industry develops in a controlled and sustainable way. Hence there may be a DFID role to play in supporting these organisations; building capacity and bringing outside expertise in technical aquaculture, industry development, environmental management and sustainable and certified production.

The main advocacy issues surround environmental risk. Lake Malawi is virtually a closed system and so further water pollution needs to be managed, or ideally, avoided altogether. At present, there are no national regulations over the use and density of cages and little regulation of the aquaculture industry. Moreover, regulations need to be strictly implemented, implying significant investment in an inspectorate and an appropriate legal framework to deal with non-compliance.

CASA should work with the GoM to support the development of legal and regulatory frameworks for the sustainable development of aquaculture in Malawi. In the interim, the WWF/TAD Standards should be adopted as best practice, and should also form the basis for the National policy, legal and regulatory frameworks that will be developed.

9.2 Value Chain 2: Poultry

9.2.1 Linking Smallholders with Markets and Agribusinesses

The egg value chain is very short – this is a positive thing in that producers can enjoy a high proportion of their products' value and easily access end markets. At least two large-scale buyers are interested in buying smallholder eggs on an outgrower basis. Indeed, the growing free range segment is smallholder-dependent. A third, Central Poultry, already runs an egg outgrower scheme, which CASA could support to refine and expand.

There may also be opportunities to partner with SMEs in input supply (although the interested output buyers can all offer assistance in input procurement to their outgrowers. However, other SME agro-input dealers may be prepared to develop their business models in order to increase their sales through greater supply to the smallholder market. This would entail, *inter alia*, developing smallholder-friendly input packages that match the requirements of producers with smaller flocks, developing rural supply networks, and advancing inputs on credit. This relationship could potential be supported by the large-scale output buyers, who may be prepared to buy down the SME’s risk.
Table 16 Potential SME Partners in the Poultry Value Chain

<table>
<thead>
<tr>
<th>Company</th>
<th>Core business</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Poultry</td>
<td>Feed (largest mill in Malawi – 200MT/day), eggs, meat (broilers)</td>
<td>Running outgrower trials, with contract maize and soya farming for feedstocks and smallholder egg producers, whom it supports to receive bank finance through evidence of contract for output purchase</td>
</tr>
<tr>
<td>Proto Feeds/Proto Chicks</td>
<td>Feed, day-old chicks, drugs, equipment</td>
<td>35 retail outlets and 5 distribution depots in Malawi. Set up a demonstration farm and training centre for smallholder producers in 2011.</td>
</tr>
<tr>
<td>NASFAM</td>
<td>Small-scale oilseed processing into feed for sale to members</td>
<td>Farmer-owned company with multiple commercial subsidiaries. Countrywide reach.</td>
</tr>
</tbody>
</table>

In a model developed in Mozambique (with broilers, but which could apply equally to egg production), farmers are financed to establish poultry housing with water and shade plus working capital for birds, feed and labour for a cycle (5-7 weeks). The poultry nucleus company (e.g. Central Poultry or alternative partner(s)) manages the important vaccinations (whether broilers or layers) without which mortality rates would compromise viability of the small farmer system. The system is commercially viable because the labour cost is low and the capital cost is borne by the farmer so the nucleus company achieves greater throughput (broilers or eggs) for a lower capital outlay.

Although the selected value chain focused on egg production, the poultry outgrower model applies equally to broiler production, the principal difference being a higher working capital investment cost for broilers due to the longer production cycle. This nucleus/outgrower poultry business has been a success story with two of the top three Mozambican poultry producers, who rely heavily on small farmers.

9.2.2 Supporting Agribusiness to Prepare for Investment

CASA would aim to identify opportunities to establish the broiler/egg outgrower business model with follow-up investment from DFIs, SMAE funds and commercial poultry companies. SMEs which could be supported in this way include Central Poultry, Charles Stewart or Kapani.

Support to lower level organisations such as farmer clubs and cooperatives is also a possibility as these associations could form the foundation of later outgrower schemes or small enterprises. There is a list of clubs available from PIAM and Greco Investments.

61 Contact Emily Msulira
There are a range of local and international NGOs which could engage in support to these clubs. Malawian organisations include the Poultry Industry Association of Malawi (PIAM), the All Creatures Animal Welfare Trust and the Rural Poultry Centre. Relevant international NGOs include Heifer International, ACDI/VOCA, CLUSA, Care, and United Purpose.

Another option could be to support SMEs involved in feed manufacture, such as Prescorp, Granite, Thanzi or to provide more finance to support innovations in the feed sector (such as the use of cassava over maize in feed). However, it should be noted that availability of feed is not a big constraint to most larger poultry producers which are self-sufficient in feed and also run feed sales operations themselves. However, with further research it may be possible to explore the idea of providing technical assistance to enable smallholder producers of soya beans or cassava to sell directly to feed producers.

Given women are active participants in farmer clubs and cooperatives and are actively involved in chicken production and trading, there is scope to deliver women’s economic empowerment through a poultry value chain intervention. Focus on behavioural change at the intra-household level would enhance women’s ability to utilise household resources and to pursue poultry production as a business in their own right.

9.2.3 Enabling Environment

The Poultry Industry Association of Malawi (PIAM) is implementing a “Buy Malawi” campaign to counter illegal imports of frozen chicken – Government restrictions, which have been in place for 15 years, are not effective. CASA could support this initiative should it decide to expand the scope to broiler chickens. For eggs, there are no enabling environment issues that would lend themselves to intervention. Indeed, the poultry industry benefits from the export restrictions on maize and soya that are damaging to farmers.
Annexes

Annex A: Bibliography of Value Chain Resources

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### Annex B: Stakeholders Consulted

<table>
<thead>
<tr>
<th>Name of Participant</th>
<th>Position</th>
<th>Organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr. Penemulungu</td>
<td>Chairman and Farmer</td>
<td>Innovative Fish Farmers Network Trust</td>
</tr>
<tr>
<td>Muhammad Ismail Abbo</td>
<td>Industrial Manager</td>
<td>Chambo Fisheries Ltd</td>
</tr>
<tr>
<td>Mr. Ngwale</td>
<td></td>
<td>MALDEACO Aquaculture Ltd</td>
</tr>
<tr>
<td>Jim Henderson</td>
<td>Associate Director</td>
<td>AgDevCo</td>
</tr>
<tr>
<td>Alex Stewart</td>
<td>Manager</td>
<td>Charles Stewart</td>
</tr>
<tr>
<td>Jaco Van Tonder</td>
<td>Manager</td>
<td>Central Poultry</td>
</tr>
<tr>
<td>Petronella Halwiindi</td>
<td>Manager</td>
<td>Heifer International</td>
</tr>
<tr>
<td>Dr Richard Kimera Ssuna</td>
<td></td>
<td>All Creatures Animal Welfare Trust</td>
</tr>
<tr>
<td>Prof. Timothy Gondwe</td>
<td>Chairperson</td>
<td>Rural Poultry Center and Partners</td>
</tr>
<tr>
<td>Mr. Brino Chirwa</td>
<td>Chief Fisheries Officer - Research (Aquaculture)</td>
<td>Ministry of Agriculture, Irrigation and Water Development, Department of Fisheries</td>
</tr>
<tr>
<td>Mrs. Patricia Mayuni</td>
<td>Deputy Director Director</td>
<td>Ministry of Agriculture, Irrigation and Water Development, Department of Animal Health</td>
</tr>
<tr>
<td>Chimwemwe Soko</td>
<td>Manager</td>
<td>Find Your Feet</td>
</tr>
<tr>
<td>Eric Chuma</td>
<td></td>
<td>Poultry Association of Malawi</td>
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<tr>
<td>Jacob Nyirongo</td>
<td></td>
<td>Farmers Union of Malawi</td>
</tr>
<tr>
<td>Dennis Chinkhata</td>
<td>Coordinator</td>
<td>Innovative Fish Farmers Network Trust</td>
</tr>
<tr>
<td>Andrew Stewart</td>
<td>Director</td>
<td>Charles Stewart</td>
</tr>
<tr>
<td>Ghiven Manjawila</td>
<td>CAHLD</td>
<td>DAHLD</td>
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<tr>
<td>Mwai Chitete</td>
<td>Programs Director</td>
<td>Heifer Malawi</td>
</tr>
<tr>
<td>E. Chuma</td>
<td>TA</td>
<td>PIAM</td>
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<tr>
<td>Aysha Johnson</td>
<td>Privates Sector Development Advisor</td>
<td>DFID</td>
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<tr>
<td>Alban Pulaizi</td>
<td>Chief Fisheries Officer</td>
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</tr>
<tr>
<td>Sartone Unyolo</td>
<td>Principal Fisheries Officer</td>
<td>Department of Fisheries</td>
</tr>
<tr>
<td>Friday Njaya</td>
<td>Deputy Director</td>
<td>Department of Fisheries</td>
</tr>
<tr>
<td>Steve Donda</td>
<td>Senior Deputy Director-Extension</td>
<td>Department of Fisheries</td>
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<tr>
<td>Samuel Ngwira</td>
<td>Business Finance Development Manager</td>
<td>National Bank of Malawi</td>
</tr>
<tr>
<td>Patrick Chikungwa</td>
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<tr>
<td>Christina Zakeyo Chatima</td>
<td>Director</td>
<td>Ministry of Trade</td>
</tr>
<tr>
<td>Cuan Opperman</td>
<td>Team Leader</td>
<td>MOST</td>
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<tr>
<td>Neil Orchardson</td>
<td>MOST</td>
<td>Ministry of Trade</td>
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<tr>
<td>Mercy Butao</td>
<td>Intervention Manager</td>
<td>MOST</td>
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<tr>
<td>Joseph Saiti</td>
<td>Most Intervention Manager</td>
<td>Ministry of Trade</td>
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<tr>
<td>Zimani Selvester</td>
<td>Mgoná Groundnuts Traders</td>
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<tr>
<td>Bizman Selvester</td>
<td>Mgoná Groundnuts Traders</td>
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<td>Mayi Banda</td>
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<td>Rhoda Ndau</td>
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<td>Lafik</td>
<td>Nyamaworld</td>
<td>Kanengo</td>
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<td>Kristian Mooler</td>
<td>Agriculture Commodity Exchange for Africa</td>
<td>Kanengo</td>
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<td>Jaco Van Tonder</td>
<td>Manager</td>
<td>Central Poultry</td>
</tr>
<tr>
<td>Name</td>
<td>Position</td>
<td>Organization/Location</td>
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<tr>
<td>Roman Malumelo</td>
<td>Coordinator</td>
<td>Donor Committee for Agriculture and Food Security</td>
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<tr>
<td>Augustine Charles Chikuni</td>
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<td>Norwegian Embassy</td>
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<tr>
<td>Chrispine Kandani</td>
<td>Quality Assurance Manager</td>
<td>Afri-Oils</td>
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<tr>
<td>Mrs. Chkani</td>
<td>Fish Farmer</td>
<td>Mchinji</td>
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<tr>
<td>Dancan Labana</td>
<td>Head Production Supervisor</td>
<td>Chambo Fisheries Ltd</td>
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<tr>
<td>Mr. Kalima</td>
<td>AEDO Chiweta</td>
<td>MoAIWD</td>
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<tr>
<td>Mr. O.M Kachinjika</td>
<td>Deputy Director</td>
<td>Fisheries Department</td>
</tr>
<tr>
<td>Mr. Mwangonde</td>
<td>Director</td>
<td>Aquafarms, Mzuzu</td>
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<tr>
<td>Sonu Oommen</td>
<td>Director</td>
<td>Malili Farms</td>
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<tr>
<td>Tom Msiska</td>
<td>Member</td>
<td>Chitukuko Fish Processing and Marketing Group</td>
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<tr>
<td>Kenan Nyasulu</td>
<td>V. Secretary</td>
<td>Chitukuko Fish Processing and Marketing Group</td>
</tr>
<tr>
<td>Monica Chavula</td>
<td>Treasurer</td>
<td>„</td>
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<tr>
<td>Bright Msiska</td>
<td>Secretary</td>
<td>„</td>
</tr>
<tr>
<td>Stiff Zowani</td>
<td>V. Chairperson</td>
<td>„</td>
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<tr>
<td>Eloai Myako</td>
<td>Member</td>
<td>„</td>
</tr>
<tr>
<td>Eda Kaluwa</td>
<td>Member</td>
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<tr>
<td>Isaac Vyanditonda</td>
<td>Member</td>
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<tr>
<td>Stallone Msiska</td>
<td>Member</td>
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<tr>
<td>Valeria Morua</td>
<td>Component Leader</td>
<td>GIZ MIERA</td>
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Annex C. Additional SME information

Maldeco Fisheries

The Foods Company Limited (trading as Maldeco) is a subsidiary of the Press Corporation, a large, listed, Malawian conglomerate. The company is based in Mangochi and is engaged in wild fisheries and cage aquaculture.

In its 2016 annual report, The Press Corporation published group turnover of USD272 million and profits of USD10 million after tax.

Maldeco is the single largest commercial fishing company and aquaculture producer in Malawi with capacity to produce 50% of total farmed tilapia in the Country. Maldeco operates three divisions;

1) Maldeco Fisheries engaged in capture fishing (Open Lake)
2) Maldeco Aquaculture grows Chambo in ponds and in cages, and
3) Maldeco Feeds which produces commercial livestock feed and fish feed for its farmed Chambo.

Maldeco processes and distributes fish as fresh, frozen, smoked, filleted or chunked to meet various customer preferences. The feed division produces all types of livestock feed products including poultry. Maldeco distributes its products through a network of shops located in strategic townships and locations across the country and through a network of chain stores.

Aquaculture harvests grew by 130% in 2016 due to the use of floating feed and improvements in aquaculture management. Fish growth was accelerated through selective stocking and double grading of fingerlings. Maldeco has invested heavily in facilities to increase production in 2017 in order to compete with fish imports from neighbouring countries. But feed production halted in 2017 due to the high cost of feedstock and power outages.

The goal for the Aquaculture Division is to grow Chambo production output to 2,000 to 8,000 tonnes per annum in the medium to long term to satisfy local demand and tap into the regional export market. Specialist technical expertise was deployed which has brought about remarkable improvements. The Company plans to acquire an extruder for the feed mill to enable the production of extruded floating feed.

While Maldeco Fisheries has been in business for 20 years, it is only in last few years that farmed fish has been a significant contributor compared with wild-caught fish.

Figure 10 Maldeco: fish sales volumes and revenues
African Novel Resources

Established in 2007 by South African entrepreneur Pierre Le Roux with the objective of setting up a cage aquaculture operation on Lake Malawi, the initial business model being a central company producing fingerlings and feed and providing management/technical assistance to a separate company or individually-owned cages for the production of tilapia species.

Initial teething problems with power and investor interest has meant that the business has set up a hatchery but not expanded the cage business.

Central Poultry

Central Poultry is a subsidiary of CP Feeds Ltd, a mid-sized organization in the animal feed and poultry sectors, founded in 2002 and located in Lilongwe. It has 120 full-time employees. It is one of five companies supplying the Malawi egg market.

CP Feeds has the largest livestock feed mill in Malawi, producing 200 tonnes of feed per day. It was the first mill in Malawi to produce pellet feed. It also processes of soya beans and sunflower seed into soya and sunflower cake as well as soya and sunflower crude oils. Its products include broiler feed (starter, grower & finisher), layer feed (pullet starter, pullet grower, pullet developer, layer 105, layer 100 & layer 16), breeder feed (breeder starter, breeder grower, breeder layer & breeder male), pig feed (pig grower, pig weaner & boar and sow) and dairy feed (dairy mix).

Central Poultry has an integrated feed to egg/broiler production facility and slaughterhouse on the outskirts of Lilongwe with a capacity of 1.2 million broilers per month and 600,000 layers at any one time. It also has in-house technical support in biosecurity and quality control.

CP Feeds/Central Poultry has outgrower trials that intervene in two points of the value chain:

1) Feedstock production – contract growing of maize and soya under centre-pivot irrigation, segmented into manageable areas for each farming family, all production bought by CP Feeds for poultry feed production and funded with bank loans against the contract as security.

2) Egg Production – small farmers each with housing and associated facilities for a 5,000 layer flock. Fully vaccinated point of lay birds are bought from Central Poultry at 15 weeks of age by means of a bank loan, supported by the production contract with the Company. Egg production begins at age 19 weeks from which time the bank loan starts to be repaid.