GLOBAL AGRICULTURE AND FOOD SECURITY PROGRAM (GAFSP)
PRIVATE SECTOR WINDOW

AGRIBUSINESS COUNTRY DIAGNOSTIC – MYANMAR

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PUBLIC VERSION

Submitted by:

Cambridge Economic Policy Associates Ltd
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### Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASEAN</td>
<td>Association of Southeast Asian Nations</td>
</tr>
<tr>
<td>AMD</td>
<td>Agricultural Mechanization Department</td>
</tr>
<tr>
<td>CARTC</td>
<td>Central Agricultural Research and Training Centre</td>
</tr>
<tr>
<td>CAGR</td>
<td>Compound Average Annual Growth Rate</td>
</tr>
<tr>
<td>CDSG</td>
<td>Capital Diamond Star Group</td>
</tr>
<tr>
<td>CDZ</td>
<td>Central Dry Zone</td>
</tr>
<tr>
<td>COSOP</td>
<td>Country Strategic Opportunities Programme</td>
</tr>
<tr>
<td>CPP</td>
<td>Crop Protection Product</td>
</tr>
<tr>
<td>CSS</td>
<td>Central Cooperative Society</td>
</tr>
<tr>
<td>DOC</td>
<td>Day Old Chick</td>
</tr>
<tr>
<td>GAFSP PrSW</td>
<td>Private Sector Window of the Global Agriculture and Food Security Programme</td>
</tr>
<tr>
<td>GoM</td>
<td>Government of Myanmar</td>
</tr>
<tr>
<td>HYV</td>
<td>High-Yielding Varieties</td>
</tr>
<tr>
<td>ICM</td>
<td>Infra Capital Myanmar</td>
</tr>
<tr>
<td>IFC</td>
<td>International Finance Corporation</td>
</tr>
<tr>
<td>JICA</td>
<td>Japan International Co-operation Agency</td>
</tr>
<tr>
<td>JV</td>
<td>Joint Venture</td>
</tr>
<tr>
<td>LBS</td>
<td>Livestock Bank System</td>
</tr>
<tr>
<td>LBVD</td>
<td>Livestock Breeding and Veterinary Department</td>
</tr>
<tr>
<td>LFME</td>
<td>Livestock Feedstuff and Milk Products Enterprise</td>
</tr>
<tr>
<td>LIFT</td>
<td>Livelihoods and Food Security Trust Fund</td>
</tr>
<tr>
<td>MADB</td>
<td>Myanmar Agricultural Development Bank</td>
</tr>
<tr>
<td>MAS</td>
<td>Myanmar Agricultural Service</td>
</tr>
<tr>
<td>MDA</td>
<td>Myanmar Dairy Association</td>
</tr>
<tr>
<td>MIC</td>
<td>Myanmar Investment Commission</td>
</tr>
<tr>
<td>MFA</td>
<td>Myanmar Farmers’ Association</td>
</tr>
<tr>
<td>MFI</td>
<td>Micro Finance Institution</td>
</tr>
<tr>
<td>MFSPEA</td>
<td>Myanmar Fertilizer, Seed and Pesticide Entrepreneurs Association</td>
</tr>
<tr>
<td>MFVPEA</td>
<td>Fruit and Vegetables Producers and Exporters Association</td>
</tr>
<tr>
<td>MLF</td>
<td>Myanmar Livestock Federation</td>
</tr>
<tr>
<td>MLFDB</td>
<td>Myanmar Livestock and Fisheries Development Bank</td>
</tr>
<tr>
<td>MLFRD</td>
<td>Ministry of Livestock, Fisheries and Rural Development</td>
</tr>
<tr>
<td>MNAP</td>
<td>Myanmar-Netherlands Agri Programme</td>
</tr>
</tbody>
</table>
MNPED  Ministry of National Planning and Economic Development
MOAI  Ministry of Agriculture and Irrigation
MOLF  Ministry of Livestock and Fisheries
MoU  Memorandum of Understanding
MPBSSMA  Myanmar Pulses, Beans & Sesame Seeds Merchants Association
MRRC  Myanmar Rice Research Centre
MRSDS  Myanmar Rice Sector Development Strategy
MSE  Microfinance Supervisory Enterprise
MSLE  Myanmar Small Loan Enterprise
MVA  Myanmar Veterinary Association
MVC  Myanmar Veterinary Council
NPK  Nitrogen, Phosphorous and Potassium
OFID  OPEC Fund for International Development
PIDG  Private Infrastructure Development Group
R&D  Research & Development
RVO  Netherlands Enterprise Agency
SD  Seed Division
SPS  Sanitary and Phytosanitary Measures
TYMP  Thirty Year Master Plan
UHT  Ultra-Heat Treated
VFRDC  Vegetable & Fruits Research & Development Center
YDTC  Yangon Dairy Training Centre

**Exchange rate**

We have assumed US$ 1 to Myanmar Kyats 1,200 for the purpose of this report.
**EXECUTIVE SUMMARY**

The International Finance Corporation (IFC) manages the Private Sector Window of the Global Agriculture and Food Security Program (GAFSP - PrSW), which is a multilateral mechanism to assist in the implementation of pledges made by the G20 in Pittsburgh, USA in September 2009. GAFSP established a private sector window to provide long and short term loans, credit guarantees, equity and advisory services to support private sector activities for improving agricultural development and food security. Through the blending of IFC finance and GAFSP finance, investments can be financed which are commercially viable, but have temporary higher costs and/or higher risks than the investments which IFC normally finances, and justify a concessional element in the financing package.

The objective of the IFC managed private sector window is to address the following:

- Support and demonstrate new and innovative financing aimed at agribusiness companies and their supply chains,
- Help increase productivity, improve market access, support innovation and development of new ideas in financing and technology, reduce information asymmetries between small end users of capital and financial institutions, and reduce risks associated with financing small holders/companies in the agribusiness sector
- Support projects that foster research, development and innovations through entities operating in the ‘last mile’ and projects that can demonstrate higher productivity, lower use of water resources and inputs such as fertilizers

As a means to reach this objective, IFC contracted Cambridge Economic Policy Associates (CEPA) to conduct an agribusiness sector diagnostic of Myanmar to 1) analyze/identify the most promising sub-sectors and commodities for IFC/GAFSP investment and advisory services and 2) identify specific IFC/GAFSP investment opportunities and related partners. This analysis would include competitiveness benchmarking to examine investment and trade patterns and evaluate the competitiveness of specific agri sub-sectors and value chains, as well as considering strategic entry points for advisory, namely water/irrigation, women, climate change as well as skills development, mechanization, technology and other potential areas.

This report presents the results of a two-phase assignment, which aimed to identify three to five agribusiness sectors in Myanmar that have the potential to deliver significant growth and development impacts as well as investment opportunities for GAFSP PrSW/IFC. Phase 1 reviewed a long list of sectors using a two stage assessment process to identify the priority sectors, as follows:

1. Review FAOStat data looking at the top-50 sectors by export value and by production value to identify ten sectors worth looking at in more detail.
2. Analyze each sector gathering quantitative data and reviewing the sectors’ competitive strengths and weaknesses; main sector participants; and providing an overview of the recent investment activity in the sector.

**Phase 1: Analyze/identify the most promising sub-sectors and commodities for IFC/GAFSP investment and advisory services**

The long-list of sectors were reviewed against five criteria, summarised below.
Table ES.1: Criteria and indicators used to identify priority sectors

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development impact</td>
<td>• Estimated number of smallholder farmers in sector</td>
</tr>
<tr>
<td></td>
<td>• Contribution to food security</td>
</tr>
<tr>
<td>Economic impact</td>
<td>• Average value of production of crop over last five years</td>
</tr>
<tr>
<td></td>
<td>• Average value of exports/imports over last five years</td>
</tr>
<tr>
<td>Competitiveness</td>
<td>• Yield per hectare achieved compared to world’s top five producers</td>
</tr>
<tr>
<td></td>
<td>• Change in the share of global exports over time</td>
</tr>
<tr>
<td></td>
<td>• Growth forecast for domestic market</td>
</tr>
<tr>
<td>Enabling environment</td>
<td>• Qualitative view on the quality of the policy environment</td>
</tr>
<tr>
<td></td>
<td>• Qualitative view on the level of donor support received</td>
</tr>
<tr>
<td>Investment potential</td>
<td>• Qualitative view on the level of private sector activity in sector</td>
</tr>
<tr>
<td></td>
<td>• Qualitative view on the amount of recent investment activity</td>
</tr>
</tbody>
</table>

Each indicator was scored between 1 (lowest) to 5; the maximum score is 55. Table ES.2 presents the data and ES.3 summarises the scores.
### Table ES.2: Data for long-list sectors

<table>
<thead>
<tr>
<th>Sector</th>
<th>Development</th>
<th>Economic</th>
<th>Competitiveness</th>
<th>Enabling environment</th>
<th>Summary assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Approx. no. of smallholders</td>
<td>Ave. daily calories</td>
<td>Ave. value exports/imports $m</td>
<td>Yield as % of global competitors</td>
<td>Change in export share score</td>
</tr>
<tr>
<td>Rice</td>
<td>3,903,546</td>
<td>1170</td>
<td>8,422.1</td>
<td>235.1</td>
<td>75%</td>
</tr>
<tr>
<td>Beans &amp; Pulses</td>
<td>1.4m - 2.7m</td>
<td>105</td>
<td>2,165.6</td>
<td>1,227.7</td>
<td>114%</td>
</tr>
<tr>
<td>Horticulture</td>
<td>505,600 - 716,000</td>
<td>47</td>
<td>1,102.9</td>
<td>1.07</td>
<td>72%</td>
</tr>
<tr>
<td>Coffee</td>
<td>28,583</td>
<td>n/a</td>
<td>8.3</td>
<td>0.27</td>
<td>58%</td>
</tr>
<tr>
<td>Sesame</td>
<td>1,414,328</td>
<td>112</td>
<td>593.3</td>
<td>54.5</td>
<td>89%</td>
</tr>
<tr>
<td>Dairy (Milk)</td>
<td>1,028,000</td>
<td>50</td>
<td>408.2</td>
<td>0.41</td>
<td>9%</td>
</tr>
<tr>
<td>Poultry</td>
<td>n/a</td>
<td>83</td>
<td>1,475.4</td>
<td>2.22</td>
<td>65%</td>
</tr>
<tr>
<td>Livestock</td>
<td>2,901,296</td>
<td>112</td>
<td>1,481.8</td>
<td>0.57</td>
<td>81%</td>
</tr>
</tbody>
</table>

Source: FAOStat, UN Comtrade, Government of Myanmar agricultural census, USAID analysis produced for the Feed the Future programme, estimates.

### Table ES.3: Ranking of the long-list of sectors

<table>
<thead>
<tr>
<th>Sector</th>
<th>Development</th>
<th>Economic</th>
<th>Competitiveness</th>
<th>Enabling</th>
<th>Invest</th>
<th>Summary assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice</td>
<td>10</td>
<td>8</td>
<td>7</td>
<td>10</td>
<td>6</td>
<td>Large sector that is critical for food security in Myanmar. Because of its importance receives support from govt. and donors. Some signs of private sector investment activity in the sector, though important to note that sector has been affected by policy uncertainty in the past.</td>
</tr>
<tr>
<td>Beans &amp; pulses</td>
<td>7</td>
<td>10</td>
<td>9</td>
<td>11</td>
<td>3</td>
<td>By far the biggest export sector in Myanmar with over $1bn of export earnings. Expectation of continued demand from India and potential to develop exports to China. From desk-based research there seems to be limited investment/ scope to add-value with most private sector firms involved in trading.</td>
</tr>
</tbody>
</table>

Total: 41

Total: 40
<table>
<thead>
<tr>
<th>Industry</th>
<th>Rating</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sesame</td>
<td>6-5-7-9-5</td>
<td>Important food security crop with the potential to increase exports if improvements in quality can be achieved. Not clear from research that there are many potential partners/has been much recent investment activity.</td>
</tr>
<tr>
<td>Poultry</td>
<td>7-5-6-8-5</td>
<td>There is strong demand for poultry in the domestic market, though opportunities to develop an export market appear to be limited. According to the research there are only two commercial scale organisations operating in the sector.</td>
</tr>
<tr>
<td>Livestock</td>
<td>8-5-7-9-2</td>
<td>The sector is also experiencing high demand. Beyond CP Livestock it is unclear that there are many other potential private sector companies of the size and track-record to make them viable investment opportunities.</td>
</tr>
<tr>
<td>Horticulture</td>
<td>5-5-6-8-5</td>
<td>The sector is very small and there is no real export market at present. Seemingly limited scope for any large-scale investment at present. The few investments identified in the sector are around $500,000.</td>
</tr>
<tr>
<td>Coffee</td>
<td>2-2-5-13-5</td>
<td>Coffee is a small but growing sector. There have been reports of investment by foreign companies. Ultimately the size of the sector may limit opportunities.</td>
</tr>
<tr>
<td>Dairy (milk)</td>
<td>5-3-3-8-5</td>
<td>Sector is reportedly not competitive with imports. There are few commercial-scale companies operating in the sector.</td>
</tr>
</tbody>
</table>
Based on the analysis and discussions with IFC/PrSW, poultry, dairy, agri-inputs and logistics were selected for the Phase 2 work. It was recognized that some of these were small/emerging sectors relative to the IFC investment criteria.

**Phase 2: Identify specific IFC/GAFSP investment opportunities and related partners**

The Phase 2 work included a country-level fact finding mission to map out and analyze the value chain of each priority sub-sector and identify their performance and constraints, potential investments and development opportunities and partnerships for consideration by GAFSP PrSW/IFC. The in-country work including meeting with various stakeholders including private sector companies, donors, government officials, commercial banks, industry and farmer associations, NGOs among others. Below is a brief review of the rationale for selection of the sectors followed by the high level potential opportunities in each sector.

**ES.1 Potential opportunities for GAFSP PrSW/ IFC in poultry value chain**

Due to cultural and religious factors, poultry meat contributes to the largest share of meat consumption in Myanmar, with consumption of poultry products estimated to have increased at 15% per annum during the 2012-14 period (FAO, 2015). Current consumption is estimated at 6kg/head/year of poultry meat and 40 pcs/head/ year of egg, which is still very low relative to South East Asian countries such as Thailand (20kg/160pcs) and Malaysia (32kg/240pcs). There has been a significant expansion in chicken meat production, which reached 1.08m tonnes in 2013. Chickens accounted for around 91% of the total poultry population, estimated at around 169m birds in 2011. A more recent report by the RVO (2015) indicates that the poultry broiler population comprised 144m birds and poultry layer population, 8m birds as of 2014, with broilers accounting for 75% of chicken meat; followed by (semi) post layers (15%) and (native) village chickens (10%).

Poultry farming is concentrated in Shan State and Mandalay, Sagaing, Yangon, Bago, and Ayeyarwaddy Regions, in rice producing areas with abundant and less costly feed resources. It is typically integrated with other livestock keeping. The high value and low land requirements of poultry raising imply that it is suitable for landless/ near landless households.

While traditional backyard poultry raising has traditionally dominated production, there has been a growing presence of modern commercial systems for broilers and chicken eggs production. In particular, contract farming has emerged as the main business model in broiler production, mainly led by Myanmar CP – a foreign-based vertically integrated company, part of the Thai-headquartered CP group – although other companies have also initiated such arrangements.

The overall market structure is highly concentrated. Myanmar CP and Japfa Maykha (another foreign-based company with a vertically integrated supply chain) combined, account for 70% of the total market share, with activities that include compound feed manufacturing; breeder farms; hatcheries; Day Old Chick (DOC) production; commercial broiler farming; and a slaughterhouse (Myanmar CP).

**Key issues/opportunities identified in the Sector Diagnostic:**

- As GDP per capita continues to grow from its current level of US$1,200 alongside the increasing trend towards urbanization it is expected that demand for poultry will increase rapidly in the future, with growth rates expected to be in the 15% to 20% per annum range.
The commercial poultry production industry is dominated by two companies, who jointly hold around 60 – 70% share of the commercial sector: Myanmar CP and Japfa Comfeed.

One of the issues with the commercial sector is a lack of existing facilities to process the chickens. Other than Myanmar CP’s slaughterhouse, a new small slaughterhouse has recently been opened in Mandalay. Apart from this the birds have to be slaughtered at one of the country’s wet markets. There is currently significant need for additional investment in poultry slaughterhouses in Myanmar, particularly in the Yangon area.

Due to the lack of local consumption of beef, poultry could become an important source of cheap protein in the future.

At present poultry production in Myanmar is not competitive. Existing data suggests that it costs around US$1.6 per kg to produce a chicken in Myanmar, which is higher than regional competitors and significantly higher than in countries such as Brazil at US$1 per kg. Although domestic preference is for fresh chickens the domestic producers are currently benefiting from the import restrictions on frozen chickens.

As demand for chickens continues to grow it is unclear that there is a strong policy rationale to continue to protect the sector, which is benefiting primarily the two main producers and leading to consumers having to pay a higher price for chicken. Therefore, measures to increase the competitiveness of domestic production are key. Given that poultry feed accounts for around 70% of costs, interventions that can reduce feed costs are critical for the future development of the sector:

- Production of maize and (the limited) domestic production of soybean is generally of low quality/ yield. Increased access to agri-inputs to increase yields and quality have an important role to play in supporting the poultry sector.
- Soybean and wheat have to be imported into Myanmar to produce the soybean cake and soybean meal that commercial producers need. According to the available data import costs are up to 40% higher than Vietnam due to inefficiencies at the port, and due to a lack of economies of scale.

ES.2 Potential opportunities for GAFSP PrSW/ IFC in dairy

Although milk and dairy does not currently constitute a large portion of the typical diet in Myanmar, there is an expectation that as the trend towards an expanding middle class continues, so too will the demand for protein and nutrient rich cow milk, particularly for young children. As the country continues to see an increase in the urban population, it is expected that the demand for milk will continue to increase: dairy consumption is expected to double over the next eight years creating a large opportunity for domestic milk farmers to recover market share that is currently being served by lower priced, higher quality imported milk products.

At present, domestic producers do not have the capacity to meet domestic demand for milk. It is estimated that less than 50% of milk consumption is covered by local production, and that figure is thought to be falling. Much of the imports have come through Singapore via official and unofficial channels. Total imports are estimated to be around $40m, though the figure could be much higher because of the level of imports entering the country through the black market. Myanmar does not
have much of an export market at the moment; the opportunity for the sector is to aim to substitute for imports.

Milk consumption in Myanmar is mostly in the form of sweetened, condensed milk which is used in coffee and tea. However, government has tried to encourage the consumption of Ultra-Heat Treated (UHT) milk to address issues related to malnutrition within the population. Much of the growth in recent consumption has been in UHT milk and other products such as condensed milk, evaporated milk, butter and cheese are imported into the country.

According to a study on the dairy sector by Wageningen UR (2014), total production of milk and dairy products is around 240,000 tonnes, with official imports put at around 55,000 tonnes and unofficial imports amounting to around 300,000 tonnes. This puts total domestic milk consumption at 600,000 tonnes per annum, which implies that around 10kg of milk and dairy products are consumed in Myanmar each year (the global average is over 100kg per year). The figures estimated by the Wageningen paper are significantly lower than official government statistics, which estimate that 1.3m tonnes of milk are produced in Myanmar each year, but this is inconsistent with the number of cattle that are reported to be in the country by government.

Most of the milk produced in Myanmar is in the Mandalay region, which has around 55% of the dairy cattle population. The remainder is found in and around Yangon and Naypyitaw. Total processing capacity in the country is also thought to be low, with around 50 plants producing sweetened condensed milk and 15 producing pasteurised milk. Local processing capacity is estimated to be around 150 tonnes per day.

**Key issues/opportunities identified in the Sector Diagnostic:**

- Although the sector is expected to double in size over the next eight years, it is growing from a very low base and therefore is unlikely to support large commercial investment. Though if growth continues to occur more opportunities could open up in the longer-term.
- Dairy companies report difficulty in increasing demand for their products given the purchasing power of consumers.
- There is a need for interventions to increase the technical capacity of existing dairy farmers e.g. in their application of hygienic standards, business planning and use of feed inputs, and general farm management practices to increase productivity.
- Policy intervention is required to consider how additional land can be opened up to increase the production of quality fodder for cattle. The existing land ownership laws make it difficult and expensive to purchase land to grow forage that has been previously focused on the rice sector.
- The sector needs wider investment in logistics to support increased and more affordable access to cold-chain facilities and transportation of dairy products.
- It is thought that expanding the school milk programme (which currently reaches around 3,500 children, compared to the 500,000 beneficiaries in Vietnam) could, alongside providing

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immediate benefits in the form of improved nutrition for children, help to develop consumers’ preference for milk in the longer-term.

ES.3 Potential opportunities for GAFSP PrSw/ IFC in agri-inputs

Crop yields in Myanmar are significantly lower than in neighbouring countries due to deficiencies in the supply of agricultural inputs, as well as in terms of affordability for farmers – according to the LIFT Baseline Survey (2012), the lack of affordable credit in rural areas and high input costs (lack or too expensive fertilizers) were identified as the most significant constraints by smallholders surveyed.

Despite some enabling reforms such as the exemption of import tax on agricultural inputs, the agri-inputs industry is still regulated, with restrictions that prevent multinationals from operating directly in the country unless they have formed a partnership with local distribution companies. The key players in the agri-chemicals industry include Myanmar Awba, the largest private sector firm, followed by Diamond Star (Armo), which is part of CDSG.

Fertilizer use in Myanmar is estimated at just 60kg/ Ha as compared to 300 kg/ Ha in Thailand and 700 kg/ Ha in Vietnam. Overall, application of chemical nutrients is just 10% of the South Asian regional average. The total size of the country’s fertilizer market is 800,000 tonnes, of which only 100,000 tonnes is accounted for by domestic output, mainly in the form of urea produced at three government-owned urea plants run by the Myanmar Petrochemical Enterprise. Total production at these plants is at less than 25% of their capacity.

Key constraints to the expansion of fertiliser production include a lack of modern equipment, high production costs and inadequate supply of natural gas (due to the government’s preference for exporting it). On the demand side, key constraints to fertiliser use include the limited access to seasonal credit and proliferation of adulterated fertilisers in the market.

Low yields are also a result of the widespread use of low-quality seeds – e.g. rice seeds of mixed varieties retained from previous harvests or traded between farmers – which may not respond to high input levels or improved water control, and/or produce a high proportion of low-value broken rice when milled.

Key issues/opportunities identified in the Sector Diagnostic:

- Fertiliser importers currently have no access to formal sources of working capital requirements
- Soil testing has not been carried out/ updated in Myanmar across all States, as such farmers have continued to rely mainly on the use of urea and Nitrogen Phosphorus and Potassium (NPK), which in all probability is not appropriate for the existing agro-ecological conditions
- There is a need for technical assistance and early-stage project development support to help develop potential investment opportunities in the agri-inputs value chain that are in early-stage of development.

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2 There are reportedly five government-owned plants overall, of which only three are in working condition.
There has been promising developments including increasing cooperation with international research institutions; as well as growing private sector investment (both domestic and foreign) in seed production, distribution and marketing.

ES.4 Potential opportunities for GAFSP PrSW/ IFC in logistics

According to the World Bank’s Logistics Performance Index (LPI), Myanmar was ranked 145 out of 160 countries in the 2014 assessment. Across all the indicators covered in the assessment: customs; infrastructure; international shipments; logistics competence; tracking and timeliness Myanmar is scored below its regional comparators. While the BMI Research (2015) logistics risk report highlights that Myanmar’s potential to act as a regional hub for goods in Asia is limited by the poor quality of ports infrastructure, the paucity of railways and the limited quality of good roads.

As a result of the poor-quality of the infrastructure networks in Myanmar, the methods used to aggregate agricultural products are often unsanitary and result in lower quality product. This is particularly true for the milk sector where collectors often rely on bicycles or public transportation to collect milk from smallholder dairy farmers. Furthermore, as onsite quality testing consists of the collector running bare hands through the milk, diseases spread rapidly between farms.

Many smallholder farmers face the problem of inadequate storage facilities for their crops. This forces farmers to sell at sub-optimal prices given that they can’t hold onto their crops to achieve a better price when market forces allow. For perishable goods, this problem is made worse by the lack of cold chain storage facilities and the unreliable electricity supply.

Due to poor transportation networks and underdeveloped value chain coordination, Burmese farmers face constraints in getting their products to market, whether goods are destined for domestic or international consumers. Yet, with the expansion of infrastructure aimed at transferring goods to export markets, several distribution business have emerged in the agricultural sector.

Key issues/opportunities identified in the Sector Diagnostic:

- Supply chain relies on several middlemen to make deals with large wholesale traders. This increases the complexity of getting products from rural companies to trade centres and warehouses in Yangon.

- Expansion of domestic retail chains such as City Mart and Sein Gay Har, are helping to streamline distribution practices.

- The underdevelopment of the power sector forces farmers to keep agricultural products at room temperature, restricting the length of time products can be stored and the distances these products can travel.

ES.5 Cross-cutting constraints

- Relatively low yields. Small scale cultivation and limited use of inputs limits ability to realise the full agricultural production potential. As of 2010, only 5.6% of total estimated agricultural land was allocated to large-scale commercial farming.

- Limited/ unreliable rural electricity, dis-incentivises investment in irrigation.
• **Poor post-harvest practices**, given the lack of investment in storage and post-harvest facilities.

• **High transport costs** due to limited structures linking water, road and rail transport; and high costs and inefficiencies of Yangon port. According to the World Bank’s Logistic Performance Index, Myanmar ranked 145 out of 160 countries in 2014.

• **Lack of value chain coordination and regulation** (particularly for cross-border transactions) contribute to poor reputation for quality in many export markets.

• **Only 20% of land is registered; land tenure security is still an issue for investors and most SHFs** due to: (i) complex and long registration process; (ii) rigid land classifications; (iii) lack of recognition of customary land use rights; (iv) weak protection of registered land use rights; (v) inefficient land administration; and (vi) large-scale land allocations without adequate monitoring, safeguards and limited capacity to solve land disputes. VFV Lands Law is identified as a key factor contributing to land grabbing by large agribusiness companies recently.

• **Effectiveness of MOAI is constrained by budgetary limitations, weak technical expertise and low coverage of extension services**. Only $0.06 of every $100 in agricultural output is spent on agricultural research compared to $0.41 by Asian neighbours. Department of Agriculture (DOA) received just 4.5% of MOAI’s budget in 2013-14, although responsible for research, extension, seed multiplication & plant health service. Links between extension staff, researchers and farmers are weak.

• **Vulnerability to climate change**. Water availability is unpredictable and seasonal, as well as limited by hydropower development and extractive activities. Other issues concern state of salinity and unrepaired flood control infrastructure in the wake of Cyclone Nargis.
ES.6 Structure of the report

This report is structured as follows:

- **Section 1** provides the full findings from the Phase 1 report, and
- **Section 2** provides the full findings from the Phase 2 report (omitting any confidential information related to specific company investment).
GLOBAL AGRICULTURE AND FOOD SECURITY PROGRAM (GAFSP) PRIVATE SECTOR WINDOW

SECTION 1: AGROBUSINESS COUNTRY DIAGNOSTIC – MYANMAR PHASE 1

December 2015

Submitted by:

Cambridge Economic Policy Associates Ltd
1. **INTRODUCTION**

Cambridge Economic Policy Associates (CEPA) was appointed by the International Finance Corporation (IFC) to carry out analysis of the agribusiness sector in Myanmar to support work related to the GAFSP PrSW/IFC.

1.1. **Background to the assignment**

GAFSP PrSW is a multilateral mechanism that is managed by the IFC. It is designed to assist in the implementation of the pledges made by the G20.

GAFSP PrSW provides long and short term loans, credit guarantees, equity and advisory services with the aim of improving agricultural development and food security in targeted developing countries. It targets agribusiness investments across the value-chain that are commercially viable but have temporary higher costs/risks that would otherwise prevent them from attracting/affording finance on more commercial terms.

1.2. **Objectives of the report and approach**

This report presents the results of Phase 1 of the assignment, which aims to identify three to five agribusiness sectors in Myanmar that have the potential to deliver significant growth and development impacts for Myanmar as well as investment opportunities for GAFSP PrSW/IFC. The sectors are taken forward to Phase 2 of the assignment where we identify the key industry players operating in each sector and investment opportunities for consideration by GAFSP PrSW/IFC.

To identify the sectors we have carried out desk-based research of secondary sources of information on the agribusiness sector in Myanmar.

We first reviewed some selected quantitative indicators to identify a long-list of sectors that were worth looking at in more detail. We then completed qualitative and quantitative analysis of these sectors to identify a short-list for Phase 2.

1.3. **Structure of the report**

This report is structured as follows:

- Section 2 provides an overview of the agribusiness sector in Myanmar.
- Section 3 provides an overview of the supply chain for agricultural inputs.
- Section 4 analyses the long-list of sectors.
- Section 5 presents our ranking analysis of the sectors to identify the short-list; provides conclusions on the priority sectors and sets out next steps.
- Annex A summarises the different Micro-Finance Institutions (MFIs) operating in Myanmar.
- Annex B discusses main constraints to financing the agricultural sector and government policy responses.
- Annex C includes a summary of donor activity in agribusiness.
• Annex D summarises activities two largest firms in the poultry sector.
• Annex E presents the bibliography.
2. **OVERVIEW OF THE AGRIBUSINESS SECTOR IN MYANMAR**

*Figure 2.1: Agricultural sector in Myanmar*

Paddy is the main crop grown – largely to meet domestic consumption – and accounts for more than half of the sown area for annual crops. Beans and pulses (mainly green gram, black gram and pigeon pea) have become the largest agricultural export item. Most rural households also raise livestock (mainly cattle, buffalo, pigs and poultry), with livestock and fisheries collectively estimated to contribute to 20% of agricultural incomes.

### 2.1. Competitive strengths and weaknesses

<table>
<thead>
<tr>
<th>COMPETITIVE STRENGTHS</th>
<th>COMPETITIVE WEAKNESSES</th>
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<tbody>
<tr>
<td><strong>Agro-ecological conditions</strong></td>
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<tr>
<td>• Potential for agricultural expansion. 5.7m Ha of unused land is perceived as cultivable; Thirty Year Master Plan (TYMP) targets 4m Ha of wasteland for permanent agricultural production, including palm oil plantations, biofuel &amp; jute development.</td>
<td>• Available land for expansion is likely to be lower than the estimated potential. Less than half the total land area is heavily forested or unsuitable for agriculture.</td>
</tr>
<tr>
<td>• Diverse agro-climatic conditions suitable for both tropical and moderate-temperate crops.</td>
<td>• Land degradation, due to soil erosion, declining soil fertility and increase in land salinity, monocropping practices and shifting cultivation etc. Degraded farming areas were estimated at 33% of total cultivated area in 2009.</td>
</tr>
<tr>
<td>• Abundant water resources. Agriculture, (mainly irrigation) accounts for around 90% of total water use, with scope to further expand and upgrade use of water resources given overall potential irrigable area of 10.53m Ha.</td>
<td>• Vulnerability to climate change. Water availability is unpredictable and seasonal, as well as limited by hydropower development and extractive activities. Other issues concern state of salinity and unrepaired flood control infrastructure in the wake of Cyclone Nargis.</td>
</tr>
<tr>
<td>• Abundant fishery resources, with potential for commercial aquaculture development in low-lying river delta areas in southern and central region.</td>
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*Source: Barry Lee (2015); Byerlee et al (2014); OECD (2014)*
- Key developments in agri-inputs supply chain. E.g. set-up of two new urea fertiliser plants which could address supply shortage; while under TYMP, Ministry of Agriculture and Irrigation (MOAI) targets mechanising 63% of cropland by 2030.
- Government of Myanmar (GoM) is promoting contract farming through crop specialisation companies particularly for rice and vegetables.
- Potential growth of food sector driven by rising incomes and urbanisation; scope to diversify into processing and marketing logistics for high-value products, given national rice self-sufficiency.
- Potential to reduce post-harvest losses of perishable crops, through planned set-up of loading and unloading facilities, commodity exchange centres and food-processing complexes near the Chinese border.
- Strong export potential, given strategic location between India and China, as well as easy access to markets in the Gulf. Trade opportunities will also be driven by development of infrastructural corridors and opening up of regional market.

### Policy and Institutional Environment

<table>
<thead>
<tr>
<th>MOAI has targeted improvements in institutional support services, such as hiring an additional 700 extension officers; setting up a horticulture department to promote crop diversification; selling ministry-owned industrial crop processing enterprises; and increased focus on Research &amp; Development (R&amp;D) and extension through a newly structured Department of Industrial Crops Development.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishment of thirteen private agricultural crop associations at the central level, under the Union of Myanmar Federation for Chambers of Commerce and Industry (UMFCCI).</td>
</tr>
<tr>
<td>Commitment to open-market policies, with liberalisation of production, trade and export of almost all crops (excluding rice) leading to growing private sector involvement in agricultural trade and an increase in agricultural export value.</td>
</tr>
<tr>
<td>Enactment of key land reforms: (i) Farmland Law to strengthen land tenure by creating a private use right; (ii) group certification of customary lands is being piloted by Land Core Group to protect land rights of traditional users in extensive long fallow farming systems; and (iii) Vacant, Fallow and Virgin (VFV) Lands Management Law, which establishes a legal framework to distribute unused land among the landless as well as grant as large concessions to investors of 2k-20k Ha.</td>
</tr>
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<td>Relatively low yields. Small scale cultivation and limited use of inputs limits ability to realise the full agricultural production potential. As of 2010, only 5.6% of total estimated agricultural land was allocated to large-scale commercial farming.</td>
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<td>High transport costs due to limited structures linking water, road and rail transport; and high costs and inefficiencies of Yangon port. According to the World Bank’s Logistic Performance Index, Myanmar ranked 145 out of 160 countries in 2014.</td>
</tr>
<tr>
<td>Low-farm gate prices due to limited access to information and markets; repayment schedules on informal loans also force farmers to sell their paddy right after harvest, when prices are low.</td>
</tr>
<tr>
<td>Lack of value chain coordination and regulation (particularly for cross-border transactions) contribute to poor reputation for quality in many export markets.</td>
</tr>
<tr>
<td>Effectiveness of MOAI is constrained by budgetary limitations, weak technical expertise and low coverage of extension services. Only $0.06 of every $100 in agricultural output is spent on agricultural research compared to $0.41 by Asian neighbours. Department of Agriculture (DOA) received just 4.5% of MOAI’s budget in 2013-14, although responsible for research, extension, seed multiplication &amp; plant health service. Links between extension staff, researchers and farmers are weak.</td>
</tr>
<tr>
<td>Top-down approach to sector management, stemming from government targets (directed planting) and larger federated trade associations with a lack of decentralised farmer organisations.</td>
</tr>
<tr>
<td>Lack of policies, legislation &amp; related institutional structures for water resources management.</td>
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<tr>
<td>Only 20% of land is registered; land tenure security is still an issue for investors and most SHFs due to: (i) complex and long registration process; (ii) rigid land classifications; (iii) lack of recognition of customary land use rights; (iv) weak protection of registered land use rights; (v) inefficient land administration; and (vi) large-scale land allocations without adequate monitoring, safeguards and limited capacity to solve land disputes. VFV Lands Law is identified as a key factor contributing to land grabbing by large agribusiness companies recently.</td>
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2k Ha.

MOAI has targeted improvements in institutional support services, such as hiring an additional 700 extension officers; setting up a horticulture department to promote crop diversification; selling ministry-owned industrial crop processing enterprises; and increased focus on Research & Development (R&D) and extension through a newly structured Department of Industrial Crops Development.

Establishment of thirteen private agricultural crop associations at the central level, under the Union of Myanmar Federation for Chambers of Commerce and Industry (UMFCCI).

Commitment to open-market policies, with liberalisation of production, trade and export of almost all crops (excluding rice) leading to growing private sector involvement in agricultural trade and an increase in agricultural export value.

Enactment of key land reforms: (i) Farmland Law to strengthen land tenure by creating a private use right; (ii) group certification of customary lands is being piloted by Land Core Group to protect land rights of traditional users in extensive long fallow farming systems; and (iii) Vacant, Fallow and Virgin (VFV) Lands Management Law, which establishes a legal framework to distribute unused land among the landless as well as grant as large concessions to investors of 2k-20k Ha.
2.2. Agribusiness enabling environment

In terms of the overall business environment, Myanmar ranked 177 out of 189 in the World Bank Doing Business 2015 Survey, receiving the lowest ranking among all 189 countries with regard to starting a business. Key issues for agribusiness investors centre on uncertainties stemming from the unpredictable and uneven implementation of policies, such as the use of export restrictions, as well as unclear criteria and restrictions governing Foreign Direct Investment (FDI). However, the desk-based research suggests that GoM has begun to take some steps to improve the business environment, including for foreign investors:

- **Establishment of the Myanmar Investment Commission (MIC) as a one-stop service center to facilitate investments.** GoM has started to streamline approval processes for investments and reduce documentary requirements for company incorporation to two weeks for foreign investors.

- **Modernisation of Company Law (2015).** Asian Development Bank (ADB) has provided technical assistance to Directorate of the Investment and Company Administration (DICA) to help strengthen the institutional framework and investment climate including supporting updates to the 1914 Company Law. DICA’s Company Act reforms have aimed to modernise the law and bring it in line with international developments and modern commercial practices; clarify and enhance the law, policy and procedures for companies in order to provide certainty for businesses and aid administration by DICA; and to strengthen the economy through clear, transparent, consistent, stable regulations with better corporate governance and accountability. The new draft Myanmar Companies Law is available on DICA’s website.

- **Enactment of Foreign Investment Law (2012) to develop a more open legal environment for FDI.** While there are still restrictions around foreign ownership in certain sectors (e.g. GoM does not permit 100% foreign ownership in agricultural inputs and food processing, FDI is generally permitted in all agricultural activities. Once approved by MIC, foreign investors can lease land for indefinite periods for seasonal crops and up to 60 years for other crops; lease period is even longer if less developed or remote areas are targeted.

- **Strengthening the domestic industry.** Although 100% foreign ownership is permitted in food processing or value-added production for export, it is not permitted for domestic markets in an effort to promote small and medium enterprises. Only Joint Ventures (JVs) with majority national ownership are permitted in seed, fertilizer and pesticide, and rice and pulse milling, in order to facilitate technology transfer. With the support of the IFC, Myanmar is now reportedly drafting a new investment law to supersede the existing laws governing both domestic and foreign investments, with a view to modernising the rules and regulations around investments.

- **Promoting modern large-scale commercial farms and plantations.** Under the VFV Lands Management Law, GoM has been allocating large concessions to investors of 2k-20k Ha at low prices. As of May 2013, 0.94m Ha of VFV land were allocated to 377 domestic companies
(average concession size of 2,497 Ha), with nearly 2m Ha granted in large land concessions overall.³

- **Reforms in the tax regime.** In an effort to move away from an arbitrary and uncertain tax regime⁴, GoM has clarified and formalised certain tax policies. Corporate income tax has been reduced from 30 to 25%, while the commercial tax of several key agricultural commodities have also been removed. VFV lands are exempt from land taxes in the initial years following issuance of land use rights. Tax incentives for foreign investors are particularly generous, and include income tax exemptions for up to three years and up to 50% reduction on income taxes on export products.

However, as suggested above in Section 2.1, there is a question around the extent to which these different reforms have been successful. Many large concessionaires seem to have acquired land rights for non-farming purposes (e.g. mineral extraction and lumbering); only 24% of VFV concessions have reportedly been developed/planted, even though they should have been fully developed by now (as per grant rules).

### 2.3. Major agribusiness firms

A major share of industry in Myanmar appears to have both direct and indirect interests in agriculture – out of 43,239 registered private industries, 35,827 represent food industries including 35,667 private companies, 354 state-owned companies and 6 municipal companies. The largest registered agribusinesses operate as rice, bean and oil mills.

Through our desk-based research, we have identified a number of domestic agribusiness/conglomerates across the supply chain from production and distribution of inputs to trading/exports of key agricultural commodities. Examples are presented in Table 2.1 below.

There are also a number of a large foreign-based agribusiness firms operating in the country, such as the vertically integrated companies, CP Livestock and Japfa May Kha, in the poultry sector (further detail is provided in Section 4.9), in addition to major investments planned recently by foreign investors. For instance:

- **Wilmar,** a Singapore-listed group, which is the world’s largest processor of palm oil by volume, is planning significant investments in Myanmar with a focus on rice, fertilizers, sugar and vegetable oil.

- **Cargill** is exploring investment opportunities for importing and exporting food and livestock feed.

- **Yoma Strategic Holdings Ltd,** a Singapore listed conglomerate is planning a number of activities including: (i) a JV with Switzerland-based ED&F Man Holdings Ltd to plant 3,700 Ha of robusta coffee at Yoma’s plantation in Ayeyarwaddy region; (ii) investments in the dairy industry, with the company already having signed a Memorandum of Understanding (MoU) with local partners to import milk powder and products from countries such as Australia, and to supply the government’s school milk program; and (iii) a partnership with Japanese

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³ Rubber, oil palm and rice have received the largest VFV land allocation, with significant areas also granted to jatropha, sugarcane, rice, cotton, and cassava.

⁴ For instance, Awba was taxed based on import volumes.
distribution co Kokubu & Co., to provide storage and transportation of agricultural produce and seafood in Myanmar.

- **Unilever**, in 2013 announced that it would re-enter Myanmar with an investment plan of $656m. The project includes assisting local farmers in the development of sustainable practices and working towards the establishment of Myanmar as a regional leader in agricultural commodities, specifically coconut sugar. Investment was expected to lead to employment of over 2,000 people at Yangon factory by 2015.
Table 2.1: Key domestic agribusiness firms in Myanmar

<table>
<thead>
<tr>
<th>Firm</th>
<th>Mains sectors/ Activities</th>
<th>Description</th>
</tr>
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</table>
| **Myanmar Agribusiness Public Corporation Limited (MAPCO)** | • Production/distribution of quality seed; distribution of fertilizers;  
• Rice cultivation on a contracted basis; construction/management of a rice mill; international trade of rice etc. | Wholly-owned non-government corporation, established in 2012. MAPCO has entered into a JV with Mitsui Bussan to develop the Integrated Rice & Food Processing Complex, in addition to setting up Agribusiness Service Centers at 10 sites in Lower Myanmar for leasing tractors, harvesters, driers etc. to farmers. MAPCO’s business plan 2012/13 also aimed to initiate Port & Grain Terminal Project (Thilawa); and activities relating to Agro-commodity Trading etc. |
| **Myanma Awba Group** | • Manufacturing and/or distribution of fertilizers; agrochemicals; imported hybrid seed of vegetable and fodder maize; weedicides. | Established in 1995 to mainly deal with imports/sale of agricultural inputs. Member organisations cover the entire input supply chain with base points to establish a sales network in various areas. The Group comprises 1,100 staff and 500 agricultural experts including agronomists to provide assistance to farmers. |
| **Seven Golden Lions Enterprise Co** | • Exports: sesames, beans and pulses;  
• Imports: compound and organic fertilizers, monosodium glutamate and prepared foods. | Myanmar-based exporter of agricultural products, established in 1983; its business is spread across Southeast and West Asia, with over 200 employees. |
| **Toe Tet Linn Co** | • Sesame, butter beans, green mung beans. | Myanmar agricultural trade company established in 1992; reportedly looking to establish relationship with Chinese trade companies to engage in border trade with China. |
| **Capital Diamond Star Group (CDSG)** | • Distribution of fertilizers and agro-chemicals;  
• Involvement in a number of agri sectors – e.g. horticulture; commodity trading (e.g. beans, rubber; exports of rice and yellow maize); key supplier of wheat flour and instant beverages;  
• Retail activities. | CDSG is a market leader in food & Fast-Moving Consumer Goods (FMCG) businesses, with many well-known brands under its portfolio (e.g. Premier™ coffee, Premier™ milk powder, Tea Master™ tea-mix, Blue Rocket™ wheat flour, and Diamond Star™ wheat flour). It plans to undertake investments of $200m across the food value chain under the JV formed with Mitsubishi Corporation – Lluvia Limited – in March 2015. It also has distribution agreements with Pepsico. Overall, the company is estimated to have 7000 employees estimated |
2.4. Access to finance

Overall, Myanmar ranked 171 out of 189 countries in terms of access to credit, under the World Bank Doing Business 2015 Survey. Limited access to finance is particularly a constraint for the agriculture sector, which receives only 1-3% of the total volume of formal bank loans.

The Myanmar Agricultural Development Bank (MADB) has effectively been the only major source of institutional credit for smallholder farmers; however, its loans are estimated to cover just a third of the farming population, with paddy production accounting for 90% of its portfolio. As a result, agricultural lending is dominated by informal sources of credit — according to Livelihood and Food Security Trust Fund (LIFT’s) 2012 Survey, family and friends are the most common source of rural household borrowing, followed by moneylenders and shopkeepers.

GoM has prioritised the development of microfinance, approving a new Microfinance Law in 2012 with the objective of legalising previous informal microfinance operations and facilitating the establishment of new Micro Finance Institutions (MFIs) by local and foreign investors. An overview of the microfinance sector is presented in Box 2.1 below, while Annex A provides further detail on the portfolios of the broad categories of MFI providers. A discussion of the various constraints to the growth of MFIs, as well as to the rural outreach of the commercial banking sector is presented in Annex B, along with a summary of key government policy initiatives to improve access to agricultural credit.

Box 2.1: Microfinance in Myanmar

The Microfinance Law imposes interest-rate caps on micro-loans (2.5% flat per month; 30% p.a.) and micro savings (minimum interest rate of 1.25% per month; 15% p.a.). Following updates in 2014, key features of the microfinance legal framework include:

- A ten-fold increase in the single loan size cap from $390 to $3,900, with MFIs/ MFOs required to hold at least 50% of their portfolio in rural areas.
- Local MFIs/ Micro Finance Organisations (MFOs) are permitted to borrow from Myanmar Economic Bank for investment funds, while International MFIs/ MFOs can borrow from foreign financial institutions, for maximum loan size of $3m.
- All MFOs/ MFIs are permitted the use of payment systems via mobile phones.
- MFOs/MFIs can charge a maximum annual interest rate of 30% for loans; and are required to pay a minimum annual interest rate of 15% for deposits/savings.

Currently, there are an estimated 215 licensed microfinance organisations (MFOs) including MFIs, with a total outreach of approximately 1.2m clients and an overall loan portfolio exceeding $150m. MFIs include banks, cooperatives, specialized agricultural development companies, political and government organizations, NGOs and companies such as AEON and ACLEDA. In particular, total assets of ACLEDA MFI Myanmar Company Limited “ACLEDA Myanmar”, were estimated at $9.3m as of the end of 2014, including a total loan portfolio of $8.8m covering 31,610 active borrowers. ACLEDA Myanmar has benefited from a debt/ equity investment of up to $3m from IFC, in addition to a debt investment of up to $3m from GAFSP, with the objective of boosting its agricultural micro-lending portfolio.

5 In principle, the size of the loan is meant to be determined by borrower’s demand and repayment capacity and cover approx. 30% of production costs. However, in reality, loan amounts are as small as $25-50/ Ha compared to estimated production costs of $250-475/ Ha. Although loan sizes have increased recently, credit still covers only a quarter of input and hired labor costs. Other issues include high non-performing loan rates and low efficiency due to high operational costs of reaching rural areas.
Other donor initiatives include the Livelihood and Food Security Trust Fund (LIFT), a Western microfinance initiative supported by countries including Denmark, EU, Netherlands, New Zealand, UK, Sweden and Switzerland. LIFT provides small agricultural loans ranging from $60-600, as well as providing funding to several MFIs including PACT Global Microfinance (PGMF), which is identified as the only institutionally and financially sustainable MFO in the country, serving around three quarters of total active clients.

In addition, GoM is reportedly launching a state-sponsored microfinance initiative in 2015, which will provide lending in amounts 100,000 kyats/acre (just over $100) to families particularly in rural areas, with a further option of borrowing an additional 500,000 kyats ($500) if loans are repaid in time.

Source: LIFT (2015); Barry Lee (2015); OECD (2014); GIZ (2013); IFC (2013)

### 2.4.1. Main government policy initiatives

Agricultural development is prioritised in the first of the four key national economic objectives. Agricultural policy objectives centre on food security, export promotion and increased farmers’ income and welfare, and are supported by key targets set to achieve a surplus in rice production; reach self-sufficiency in edible oils; and step up production of exportable pulses and industrial crops.

More specifically the MOAI has identified five key strategies with regard to agricultural development: (i) development of new agricultural land; (ii) provision of sufficient irrigation water; (iii) provision and support for agricultural mechanization; (iv) application of modern agro-technologies; and (v) development and utilization of modern varieties.

The Figure below provides information on the medium and long-term plans which present Myanmar’ agricultural policy.
Figure 2.2: Agricultural Policy Frameworks in Myanmar

**Medium term agricultural policy framework**

- **Framework for Economic and Social Reforms (FESR) Policy Priorities 2012-15**, target agricultural productivity improvements by increasing extension services and government loans, removing supply chain barriers and promoting demand-oriented market support mechanisms. Key interventions involve:
  i. improving productivity of the rice sector through improved seed quality, better agronomic practices, optimized fertilizer and input dosages, and integrated pest management;
  ii. promoting dry season diversification of small farmers into high-value horticulture, fresh fruit, poultry and small livestock;
  iii. improving farm-level water management by promoting low-cost micro irrigation; and
  iv. expanding microfinance in rural areas.

- **Five Year Development Plan (2011-12 to 2015-16)** targets an overall GDP growth rate of 7.7%. Five priority areas are identified for agriculture:
  i. seed production and emergence of a seed industry;
  ii. training and education;
  iii. research and development;
  iv. commercial contract farming; and
  v. market liberalisation. The Plan aims to intensify production, particularly to double rice exports within two year.

**20-Year Development Plan in the Agricultural Sector (2011-12 to 2030-31).**

Under its long-term plan, MOAI is focused on capturing market share at regional and global markets for important crops and agro-based, value-added products; promoting food security for rural people; and increasing green-growth production in conformity with natural environment. Major policies under the framework focus on:

- **Enhancement of agricultural productivity**, such as through high yield and quality seeds production and distribution; promoting utilization of agricultural inputs.
- **Enhancement of Technologies and Extension Services**, such as promoting agricultural mechanization, irrigated farming; and undertaking R&D for advanced agricultural technologies
- **Improving access to market**, including development of a of a sustainable market (high value-added agricultural products and promotion of agro-based industry).
- **Agricultural statistics**, including upgrading accuracy of settlement and land record in agricultural statistics.
- **Reviewing and evaluation of existing agricultural laws and regulations**
- **Promoting dissemination of Information and development of media**

2.5. Donor interventions

A broad range of international donors are active in Myanmar’s agriculture sector, including the World Bank (WB); ADB; USAID; International Fund for Agricultural Development (IFAD); Food and Agriculture Organization (FAO); Livelihoods and Food Security Trust Fund (LIFT); Global Environment Facility (GEF); Australian Centre for International Agricultural Research (ACIAR); Japan International Cooperation Agency (JICA); Korea International Cooperation Agency (KOICA); and Netherlands Enterprise Agency (RVO).

The projects largely aim to promote agricultural production, drive improvements in food security, and introduce regional and global best practices in sustainable and scalable smallholder agricultural and rural development. Below, we provide examples of some of the key activities that have been and/or are being undertaken. A more detailed summary of donor interventions in Myanmar is provided in Annex C.
Examples of donor activities in agribusiness

- **Support for climate-smart agricultural production.** GEF is promoting adoption of climate smart agriculture and sustainable forest management policies and practices, while the World Bank’s Ayeyarwady Integrated River Basin Management Project aims to strengthen integrated, climate resilient management.

- **Provision of inputs and support for on-farm mechanization.** For instance, KOICA’s Land Reform Project for Transformation into Mechanized Farming will help help Myanmar establish a training school for agricultural mechanization at Yein, while farmland in other Zabuthiri townships in the same area will also be upgraded. More broadly, around 183,000 households have accessed credit for farm and non-farming purposes from LiFT.

- **Strengthening research.** ACIAR is researching ways to improve quality seeds and food production techniques that can be relayed to farmers and rural households, and is also researching rice, legumes, livestock and fisheries.

- **Development of infrastructure, particularly irrigated agriculture.** For instance, IFAD’ Fostering Agricultural Revitalization in Myanmar (FARM) project contributes to on-going expansion of irrigated areas, covering command areas of six irrigation schemes in Nay Pyi Taw Union Territory (more than 35 Ha within five townships), in addition to 10k Ha of rain-fed lowlands and uplands located around these townships. ADB has also proposed a project aimed at rehabilitation and modernization of irrigation infrastructure in the Central Dry Zone.

- **Post-harvest support.** LiFT & ADB have both prioritized improvements in post-harvest storage and processing facilities, while KOICA has funded construction of a Post-Harvest Technology Training Centre to provide training on post-harvest techniques for a number of sectors including rice and fruits.

- **Capacity building.** A number of donors including Italy and JICA are undertaking capacity-building activities; while, overall around 294,000 people have participated in capacity development training funded by LiFT projects.

- **Strengthening institutional framework.** ADB is providing support to strengthen government capacity to develop and implement policies through a combination of policy advice, learning programs, workshops and seminars to share knowledge and discuss economic development and policy issues.

- **Agricultural and business services.** IFAD’ FARM project involves a component to finance the sustainable growth of rural micro-businesses and SMEs.
3. **AGRI-INPUTS SUPPLY CHAIN**

Crop yields in Myanmar are significantly lower than in neighbouring countries due to deficiencies in the supply of agricultural inputs, as well as in terms of affordability for farmers – according to the LIFT Baseline Survey (2012), the lack of affordable credit in rural areas and high input costs (lack or too expensive fertilizers) were identified as the most significant constraints by smallholders surveyed.

Despite some enabling reforms such as the exemption of import tax on agricultural inputs, the agri-inputs industry is still regulated, with restrictions that prevent multinationals from operating directly in the country unless they have formed a partnership with local distribution companies. The figure below illustrates the key players in the agri-chemicals industry, indicating Myanmar Awba to be largest private sector firm, followed by Diamond Star (Armo), which is part of CDSG. An overview of both conglomerates is presented in Section 2.3, as part of the summary on major agribusiness firms in Myanmar.

*Figure 3.1: Agri Chemicals Market Share and Competitors*

*Source: Barry Lee (2015).*

This sub-section presents an overview of the supply chain for the key agricultural inputs – fertilizers; pesticides; and seeds – as well as a discussion of the underlying constraints.

3.1. **Fertilisers**

Fertilizer use in Myanmar is estimated at just 60kg/ Ha as compared to 300 kg/ Ha in Thailand and 700 kg/ Ha in Vietnam. Overall, application of chemical nutrients is just 10% of the South Asian regional average. The total size of the country’s fertilizer market is 800,000 tonnes, of which only 100,000 tonnes is accounted for by domestic output, mainly in the form of urea produced at three government-owned urea plants run by the Myanmar Petrochemical Enterprise.\(^6\) Total production at these plants is at less than 25% of their capacity.

\(^6\) There are reportedly five government-owned plants overall, of which only three are in working condition.
However, domestic output may increase with the development of two new fertiliser plants producing urea; in addition, there may be scope to establish private fertiliser compounding plants – small amounts of compound fertiliser, bio-fertiliser and foliar fertilisers are already being produced by State-owned entities and private companies from imported materials. For instance, Myanmar Awba Group has a steam granulation compound fertilizer plant. The figure below presents the market shares held by key players in the fertilizer market.

*Figure 3.2: Fertilizers Market Share and Competitors*


Key constraints to the expansion of fertiliser production include a lack of modern equipment, high production costs and inadequate supply of natural gas (due to the government’s preference for exporting it). Overall, fertiliser production is not perceived as profitable for most enterprises, despite the relative lack of competition in the market, as well as the presence of excess production capacity; increasing demand; removal of subsidies (which have allowed prices to rise in line with international levels); and import tax exemptions for private sector firms to import and distribute fertilizers.

On the demand side, key constraints to fertiliser use include the limited access to seasonal credit and proliferation of adulterated fertilisers in the market. OECD (2014) reports that most farmers surveyed indicated that they were unable to determine whether the fertilizer purchased (either imported or purchased domestically) was adulterated, with the exception of some brands selling at a 50-100% premium.

The supply of unregistered, low quality fertilisers is in large part due to lack of registration and inspection of fertilisers imported through cross-border trade with China (only 20% of fertilizers are imported through the sea port), with this problem compounded by the lack of a bilateral agreement with China on imported fertiliser quality control. Further, there is a general absence of a systematic/risk-based inspection process, with inspection of fertilisers on the retail and wholesale market – by the Land Use Division – often reactive in nature, to address complaints. As a result, fertilisers often contain less nutrient gradients relative to registration standards. With regard to domestic production, a survey by Myanmar Farmers Association (MFA) indicates that some samples only contain about 1-2% of the nutrient gradients in other countries. Locally produced fertilisers reportedly also lack...
stability, granule size and packing. The table below summarises the main issues affecting the fertiliser supply chain.

**Table 3.1: Key constraints to the fertilizer market in Myanmar**

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Issues/ constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>• Unfavourable fertiliser/ output price ratios&lt;br&gt;• High fertiliser import cost&lt;br&gt;• Uneconomic use of fertilizers; low crop response</td>
</tr>
<tr>
<td>Accessibility</td>
<td>• Lack of market information on global, regional and local prices and quantities&lt;br&gt;• Limited product and use knowledge by farmers&lt;br&gt;• High inland road freight rates</td>
</tr>
<tr>
<td>Quality of fertilizer use at the farm level</td>
<td>• Lack of legal and regulatory framework for monitoring product quality; illegal traders</td>
</tr>
<tr>
<td>Market development</td>
<td>• Inadequate financing available for importer, wholesaler and retailers.</td>
</tr>
</tbody>
</table>

*Source: Hnin Yu Lwin et al*

### 3.2. Pesticides

Low agricultural output is also a result of inadequate development of Crop Protection Products (CPPs) – use of CPPs in Myanmar is estimated at just 8 – 10% of the corresponding level in Vietnam. While there is a registration process in place for new CPP imports, in order to enable the GoM to identify the origin and active ingredients in the products as well as determine effectiveness through testing, this is a relatively lengthy procedure which can take more than two years. Further, similar to fertilizers, anecdotal evidence indicates that registration is mainly applied to imports through the sea port, with products entering through land border trade from China largely excluded from the registration process.

Although pesticide application is reportedly increasing, as is the case with the broader inputs industry, a lack of finance and weak awareness of crop protection constrain adoption by smallholders. However, large formal pesticide distributors are reportedly undertaking initiatives to expand the market such as through setting up agricultural demonstration sites and agriculture-related technical training. Key developments also include establishment of the country’s first privately owned ISO 9001:2008 certified pesticides formulation plant by Myanma Awba Group.

### 3.3. Seeds

Low yields are also a result of the widespread use of low-quality seeds – e.g. rice seeds of mixed varieties retained from previous harvests or traded between farmers – which may not respond to high input levels or improved water control, and/or produce a high proportion of low-value broken rice when milled.
Overall, the quantity of quality seed supplied by state seed farms is insufficient to meet farmers’ needs. DOA’s limited budget has impeded the ability of the Seed Division (SD) to efficiently undertake production and distribution of certified seeds for major crops. While SD operates 22 seed farms and the Myanmar Rice Research Centre (MRRC), expenditure on seed research is low – only $6,640 of its total budget of $2.3m was allocated to research in 2013/14. The figure below presents a summary of key constraints to the development of the seed industry in Myanmar.

Figure 3.3: Key constraints to the development of the seed industry in Myanmar

Supply side constraints

• Under-funded research and extension activities.
• Weak incentives for growers and private sector companies to invest in the seed industry.
• Inadequate infrastructure to support production, seed testing, processing and storage; and lack of systematic distribution system.
• Weak capacity of growers, technicians and researchers; and inadequate skills for technical support.
• Weak facilities for seed quality control, management and monitoring.
• Difficulties underlying import and export of seeds due to lack of SPS and weak quarantine procedure.
• Lack of diversification, with a focus mainly on rice, vegetables and maize.

Demand side constraints

• Low awareness and knowledge with regard to quality seeds; and lack of clear benefits from use.
• Price and affordability.
• Weak access to the market
• Quality assurance.

Source: Tin Htut Oo and Tin Maung Shwe (2013)

In terms of private sector involvement, Rice Specialisation Companies (RSCs) have reportedly engaged in certified seed production and distribution in targeted areas through contract farming arrangements – however, as is discussed in Section 4.2, contracted ventures have largely failed and are now mostly dormant due to issues around side selling and loan defaults, which have limited the viability of such operations.

Nonetheless, there have been a few promising developments including increasing cooperation with international research institutions; as well as growing private sector investment (both domestic and foreign) in seed production, distribution and marketing – in particular, a few local and foreign seed companies are reportedly producing hybrid seeds for paddy (Myat Min), corn (CP Company) and fruits & vegetables (Known You Seed company, Malar Myaing, East West Seed Company, Genuine Seeds company and small private individuals), with the support of MOAI.
4. **LOGISTICS SECTOR**

4.1. **Overview of logistics sector**

According to the World Bank’s Logistics Performance Index (LPI), Myanmar was ranked 145 out of 160 countries in the 2014 assessment. Across all the indicators covered in the assessment: customs; infrastructure; international shipments; logistics competence; tracking and timeliness Myanmar is scored below its regional comparators. While the BMI Research (2015) logistics risk report highlights that Myanmar’s potential to act as a regional hub for goods in Asia is limited by the poor quality of ports infrastructure, the paucity of railways and the limited quality of good roads.

The logistics sector covers a range of different issues, for the purposes of this desk-based study we have carried out research to identify some of the main factors affecting the collection, storage and distribution of agricultural produce. This is summarised in the sub-sectors below.

4.2. **Agricultural collection**

As a result of the poor-quality of the infrastructure networks in Myanmar, the methods used to aggregate agricultural products are often unsanitary and result in lower quality product. This is particularly true for the milk sector where collectors often rely on bicycles or public transportation to collect milk from smallholder dairy farmers. Furthermore, as onsite quality testing consists of the collector running bare hands through the milk, diseases spread rapidly between farms.

In order to address these issues, the Animal Production and Health Commission for Asia (APHCA) created programs to improve management and collection practices in the Myanmar dairy industry. Myanmar based milk collecting business Double Cow Dairy, is implementing Resazurin tests for farmers. WALCO MCC, another Myanmar collector has created an incentive payment system where a surplus milk price will be applied according to milk hygiene, with testing training provided by APHCA. Silvery Pearl, also benefitting from the APHCA program, now conducts laboratory testing at the time of collection. After completing the APHCA program, WALCO and Double Cow Dairy received certification from the Food and Drug Administration Department under the Health Ministry. The price of milk received by all three companies increased by 16-30% after implementing the program.

4.3. **Storage facilities**

Many smallholder farmers face the problem of inadequate storage facilities for their crops. This forces farmers to sell at sub-optimal prices given that they can’t hold onto their crops to achieve a better price when market forces allow. For perishable goods, this problem is made worse by the lack of cold chain storage facilities and the unreliable electricity supply.

This problem is especially pertinent for the rice, grain and seed storage sectors. With the risk of excessive moisture and infestation of insects and rodents, stored goods can suffer reduced germination or become unsaleable. GrainPro, Inc., a USA-based company with a subsidiary in the Philippines, has developed hermetic storage systems with plans to distribute across Myanmar targeting smallholder farmers. The Myanmar Rice Federation will aid in the storage problem by opening several warehouses both for use as storage, and also for use as collateral to secure bank loans. Myanmar Agribusiness Public Corp. (MAPCO) is currently building export bases for rice storage near major cities. The facility near the Thilawa port, with expected completion in 2015, will handle
shipments of domestically produced long-grain rice in the amount of 300,000 tons per year, or 20% of total rice exports. These MAPCO facilities will also allow for quick loading of rice during rainy season, where currently these capabilities do not exist.

With respect to temperature controlled storage for livestock and poultry production, the underdevelopment of the power sector forces farmers to keep agricultural products at room temperature, restricting the length of time products can be stored and the distances these products can travel. To address this issue, several cold storage businesses have been started in the sector in recent years. For instance: Premium Sojitz Logistics (PSL), a joint venture between Myanmar-based Premium Distribution Co (PDC) and Japan-based Sojitz Logistics was formed in 2013. PSL plans to build cold-storage facilities in Yangon with warehouse conditions of room temperature, refrigeration and frozen temperatures to store various perishable items. Additionally, PSL will initiate long-distance cold chain logistics connecting Yangon, Naypyitaw and Mandalay and eventually develop two cross-border cold chains connecting to the greater Mekong region.

Other cold-chain agribusinesses currently operating in Myanmar include:

- Myanmar-based Ice Mountain Cold Storage (horticulture, egg and fish storage) and Delhi-based Sohan Lal Commodity Management Pvt. (warehousing and agri-commodity storage).
- Yoma Strategic Holdings, in partnership with Kokubu & Co. is developing end-to-end cold chain logistics facilities throughout Myanmar to facilitate storage and transport of perishable goods. The partnership, known as Kospa Cold Chain Logistics, will initially involve the construction of distribution centres in Yangon and Mandalay and eventually develop into a cross-border logistics network.

4.4. Distribution/export

Due to poor transportation networks and underdeveloped value chain coordination, Burmese farmers face constraints in getting their products to market, whether goods are destined for domestic or international consumers. Yet, with the expansion of infrastructure aimed at transferring goods to export markets, several distribution business have emerged in the agricultural sector.

For example, in the beans and pulses sector, the supply chain relies on several middlemen to make deals with large wholesale traders. This increases the complexity of getting products from rural companies to trade centres and warehouses in Yangon. Similar issues exist in the livestock sector where the lack of cold chain transportation, the number of intermediaries between farmers and markets and the geographically isolated location of many of the rural farming communities impede the flow of products from farmer to market. On the other hand, the expansion of domestic retail chains such as City Mart and Sein Gay Har, are helping to streamline distribution practices. Several of the businesses involved in cold chain storage and warehousing, such as Premium Stojitz Logistics and Kospa Cold Chain Logistics are also involved in cold chain transportation.

There are currently private sector distribution businesses operating in both domestic consumer markets and export markets. For example, Yangon-based Consumer Goods Myanmar Co. is a large distribution company with branches in all 14 states of Myanmar with over 300 distribution trucks, 130 warehouses and 500 retail outlet members, focusing on distribution for local consumption. On the other hand, Shwe Myanmar Investment and Commercial Co., also based in Yangon, specializes in
exportation of beans and pulses, fish and other goods to Singapore, India, Pakistan, Bangladesh and China.

4.5. **Summary of private agribusiness operating in logistics**

Based on our desk-based review we identified a number of logistics firms involved in the collection, storage and distribution of agricultural produce. These are summarised in Table 4.1 below.

**Table 4.1: private sector agribusinesses operating in the logistics sector**

<table>
<thead>
<tr>
<th>Name</th>
<th>Region</th>
<th>Core Business</th>
<th>Joint Venture?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Agricultural Collection</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WALCO MCC</td>
<td>Yangon, Myanmar</td>
<td>Milk collector, processor, distributor</td>
<td></td>
</tr>
<tr>
<td>Double Cow</td>
<td>Mandalay, Myanmar</td>
<td>Milk collector, processor, distributor</td>
<td></td>
</tr>
<tr>
<td>Silvery Pearl</td>
<td>Yangon, Myanmar</td>
<td>Milk collector, processor, distributor</td>
<td></td>
</tr>
<tr>
<td>CP Livestock</td>
<td>Yangon, Myanmar</td>
<td>Poultry slaughterhouse, only one operational in Myanmar. Alternative to manual slaughter at wet market. Also feed manufacturing.</td>
<td></td>
</tr>
<tr>
<td><strong>Storage Facilities</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GrainPro, Inc.</td>
<td>USA, subsidiary in Philippines.</td>
<td>Producer of reusable hermetic storage bags for smallholder farmers.</td>
<td></td>
</tr>
<tr>
<td>Myanmar Agribusiness Public Co. (MAPCO)</td>
<td>Yangon, Myanmar</td>
<td>Agribusiness services for warehousing, machinery rentals, fertilizer distributing, training, rice milling. Operations in Ayeyarwaddy, Naypyitaw, Yangon.</td>
<td>Affiliated with government?</td>
</tr>
<tr>
<td>Premium Sojitz Logistics</td>
<td>Yangon, Myanmar</td>
<td>Various temperature controlled warehouses in Yangon. Eventually, will develop 2 cross-border cold chains to connect greater Mekong region.</td>
<td>Yes. Ownership by Myanmar based PDC and Japan based Stojitz Logistics</td>
</tr>
<tr>
<td>Ice Mountain Cold Storage</td>
<td>Yangon, Myanmar</td>
<td>Cold storage provider</td>
<td></td>
</tr>
<tr>
<td>Company Name</td>
<td>Location</td>
<td>Description</td>
<td>Ownership Relationship</td>
</tr>
<tr>
<td>------------------------------------------------------------------</td>
<td>---------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>Kospa Cold Chain Logistics</td>
<td>Myanmar</td>
<td>End-to-end cold chain logistics for storage and transportation. Two key distribution centres in Mandalay and Yangon.</td>
<td>Yes. JV with ownership by Japan-based Kokubu and Myanmar-based Yoma (or SPA group).</td>
</tr>
<tr>
<td>Yoma Strategic Holdings Ltd.</td>
<td>Yangon, Myanmar and Singapore</td>
<td>Agriculture, logistics, real estate, construction, retail. Strategic partner of IFC.</td>
<td>Yes. Parent company to Kospa Cold Chain Logistics with Kokubu.</td>
</tr>
<tr>
<td>Kokubu &amp; Co., Ltd</td>
<td>Tokyo, Japan</td>
<td>Food wholesaler, logistics, trade co.</td>
<td>Yes. Parent company to Kospa Cold Chain logistics with Yoma.</td>
</tr>
<tr>
<td><strong>Distribution/Export</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sojitz Logistics Corporation</td>
<td>Tokyo, Japan</td>
<td>International logistics and trade agency.</td>
<td>Yes. Parent co Premium Sojitz Logistics.</td>
</tr>
<tr>
<td>Myanmar Distribution Group (MDG)</td>
<td>Yangon, Myanmar</td>
<td>Large supply chain management and distribution co. Serves domestic markets and export markets.</td>
<td></td>
</tr>
<tr>
<td>Sein Gay Har</td>
<td>Yangon, Myanmar</td>
<td>Supermarket.</td>
<td></td>
</tr>
<tr>
<td>Consumer Goods Myanmar Co., Ltd.</td>
<td>Yangon, Myanmar</td>
<td>Distribution across all of Myanmar. Also do manufacturing and warehousing.</td>
<td></td>
</tr>
</tbody>
</table>
5. **SECTOR ANALYSIS**

This section provides a summary analysis of a long-list of agribusiness sectors in Myanmar. First it explains how the long-list was identified, it then provides sector summaries.

5.1. **Long-list of sectors**

The long-list of sectors covered in this report was identified following discussion with the IFC team. The following sectors were considered to be important to follow up with:

- Rice
- Beans and pulses
- Horticulture
- Coffee
- Sesame seed
- Milk
- Livestock
- Poultry

A review of each sector is presented in the following sub-sections.

5.2. **Rice**

Rice is the most important agricultural sector in Myanmar, accounting for 40% of gross agricultural output and 13% of overall GDP. As a key staple food, rice contributes two-thirds of calorie intake and 68% of daily protein consumption of Myanmar’s population. The annual per capita consumption of around 175 kg of milled rice is the highest in Asia. Paddy accounts for the largest share of total planted area (30%) of all crops. The trends in land used for rice, production of rice, and rice yields are illustrated in the charts below.

*Figure 5.1: Rice production in Myanmar*

![Rice production chart](image)

*Source: FAOStat*

According to FAOStat data (which is derived from official government data), the area under rice production averaged 8m Ha between 2009/10 – 2012/13, with an average yield of around 3.8 tonnes per Ha. FAOStat data estimates that total rice production in Myanmar is around 30m tonnes per year.
These estimates are higher than USDA data, which indicates that national harvested area averaged 6.7m Ha over the corresponding period, with actual production around half the level reported by the MOAI. It is difficult to determine what is the more reliable source of data from a desk-based review; other studies such as Denning et al (2013) produce estimates of production that are broadly in line with USDA’s calculations.  

Rice farming contributes to the livelihoods of around 70% of the rural population, with approx. 3.4m households actively involved in the value chain. Approximately half of total production is concentrated in the delta growing zone (Ayeyarwaddy, Bago and Yangon regions), a quarter in the dry zone (including Mandalay, Sagaing, and Magway regions), with the balance in coastal and mountainous areas. Most paddy production is on small farms, averaging 2 Ha in size, with around 80% of annual production harvested during the monsoons.

Rice is an important source of export earnings for Myanmar, with UN Comtrade data suggesting that earnings were over $150m in 2013. World Bank (2014) reports that Myanmar exported 1.3m tonnes of rice in 2012/13, which is below the 2m target set by government.

Around 75% of all rice shipments are directed to Africa (particularly, Ivory Coast, Guinea, and Burkina Faso) and another 14% to Bangladesh. Exports are also directed to Indonesia and the Philippines, while there has also been a notable increase in informal border trade with China, mainly for the 25% broken rice variety. Overall, low quality 25% broken rice accounted for around 92% of Myanmar’s total exports between 2010 to 2012.

The recently formulated Myanmar Rice Sector Development Strategy (MRSDS) is the government’s policy framework for the rice sector. Further detail is presented in Box 5.1.

Box 5.1: The Myanmar Rice Sector Development Strategy

<table>
<thead>
<tr>
<th>MOAI is aiming to increase milled rice production to 10.13m tonnes for local food consumption and to at least 6m tonnes for international trade by 2030. To achieve this they want to maintain 7.70m Ha of rice area, which delivers an average yield of at least 4.20 tonne/ Ha per cropping season. Interim targets include an increase in sown area to 7.59m tonnes in 2020/21, with an average yield of at least 3.9 tonnes per Ha per season.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ten activities to achieve these targets by 2030 are guided by the following strategic objectives: (i) improving rice productivity, rice quality and nutritional value; (ii) adapting to, and mitigating effects of, climate change and reduce risks, while protecting rice ecosystems and the environment; (iii) protecting Myanmar rice as a quality brand to enhance its competitiveness in international trade; (iv) improving the well-being and capacity of smallholder farmers; and (v) enhancing efficiency in the rice value chain and reducing post-harvest losses.</td>
</tr>
<tr>
<td>In summary, three main action areas are suggested for achieving the vision by 2020: (i) increasing investment in capacity building, research, development and extension; (ii) increasing investment in rural infrastructure; and (iii) implementing institutional and policy reforms and innovations.</td>
</tr>
</tbody>
</table>


There is a significant level of donor involvement across the rice value chain, from support targeted at development of a quality seed supply – e.g. JICA, the World Bank-funded Agricultural Development Support Project (ASDP) and LIFT’s proposed Delta 3 Programme – to development of post-harvest

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7 The authors examine field surveys by international organisations such as IRRI and LIFT to arrive at more bottom-up set of estimates.
techniques, e.g. Korea International Cooperation Agency’s (KOICA) Postharvest Technology Training Centre (PTTC).

### 5.2.1. Overview of the rice value chain

<table>
<thead>
<tr>
<th>Key constraints</th>
<th>Research and development</th>
<th>Inputs and farmer services</th>
<th>Production</th>
<th>Post-harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weak development of recommendations for varieties in different growing environments; and for pre- and post-harvest crop management. Lack of linkages between research programs and extension services.</td>
<td>Poor quality control and weak support to seed multiplication farms. Bottleneck in supply of seeds &amp; affordable high-quality inputs. Financing and capacity constraints of extension services. Limited provision of improved technologies &amp; management practices.</td>
<td>Inadequate irrigation. Low levels of cropping intensity. Shortage of labour. Low levels of mechanisation. Limited access to financial services. Land tenure risks.</td>
<td>Inadequate post-harvest facilities. Old, inefficient mills. Weak infrastructure, especially for power and transport. Poor SPS measures. Volatile paddy prices. High port and export procedure costs.</td>
<td></td>
</tr>
</tbody>
</table>

**Public sector**
- MOAI – DOA; DAP; DAR; MAS – SD YAU; CARTC; MRF; MOC; MRRC
- MOAI – DAR; DOA; YAU; MADB; MRF; MOF; LUD; Plant Protection Division; MAPCO
- MOAI – DI; AMD; MADB; DOA; MRF; MOC; MOF; UMFCCI; MAPCO
- MOAI – DAP; DOA; MRF; MOC; MOE; MOF; MAPCO; MFCCI; Myanmar Economic Corporation; Myanmar Economic Holding

**Private sector**
- MFSPEA; RSCs; Myat Min
- MPPA; MFA
- RSCs - e.g. Adipati Agricultural Produce Trading; Khittayar Hintar (under Ayeyar Hintar Trading); Shwe Wah Yaung Green Land Agricultural Cooperative Society
- MRMA; MRPTA
- Conglomerates: Ayeyar Hintar Trading (under Ayeyar Hintar Group); Shwe Wah Yaung; Exporters: CDSG; Bayint Naung Business Group; Tharyawaddy District; XY Trading; and Golden Lace; Green Land Agricultural
### 5.2.2. Strengths and weaknesses of the rice sector

<table>
<thead>
<tr>
<th>COMPETITIVE STRENGTHS</th>
<th>COMPETITIVE WEAKNESSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Rich natural resources with lands suitable for rice cultivation and potential for irrigation.</td>
<td>• Climate change has increased risk of extreme weather events, e.g. drought, flooding, salinity</td>
</tr>
<tr>
<td>• Diversity of rice varieties with a high branding and marketing potential. Rice breeders have developed approx. 70 High-Yielding Varieties (HYVs) in collaboration with IRRI though unclear how many have been adopted by farmers.</td>
<td>• Key factors driving low rice productivity: (i) <strong>Use of low-yielding traditional varieties and poor quality seeds.</strong> Availability of quality seeds at the time of planting is less than 5% of total seed requirements of farmers, who often use seed from previous harvests; (ii) <strong>proliferation of unregistered low-quality fertilizer products and formulations in the market,</strong> as well as unregistered/banned pesticides. Application rates of urea are often low and not at the right crop stage; and (iii) <strong>weak capacity of underfinanced extension system.</strong> E.g. each staff member is required to cover 1,200 Ha during monsoon cropping.</td>
</tr>
<tr>
<td>• Plans to strengthen rice breeding through setting up the Rice Breeding Academy, and Myanmar Rice Academy, to provide training to extension agronomists, subject matter specialists and farmers involved in rice production and rice-based farming systems.</td>
<td>• <strong>On-farm mechanisation</strong> is low due to land tenure risks, relative lack of service providers and limited access to credit.</td>
</tr>
<tr>
<td>• GoM is targeting an expansion in rice production through increased loans to farmers (under MADB), development of infrastructure (including irrigation), as well as increasing mechanization and technology transfer, to address the labor shortage.</td>
<td>• Official banking policies also limit long-term lending to millers, as a max loan duration of 12 months is insufficient for capital investments.</td>
</tr>
<tr>
<td>• Local and foreign private sector involvement is promoted across the value chain from development of a sustainable rice seed system to modern large-scale rice farming, such as by granting the right to develop virgin and fallow land.</td>
<td>• <strong>High losses in the quantity and quality of rice</strong> due to shortage of harvesters, threshers, dryers &amp; good-quality storage warehouses, as well as the lack of farm-to-market roads, which</td>
</tr>
</tbody>
</table>
• Under the Myanmar Rice Federation (MRF), MPPA, MRMA, MRPTA and RSCs provide combined support for paddy and rice marketing for both local and export markets.

• Growing presence of donors who are focused on developing agricultural production infrastructure to support and expansion of dry-season production. Examples include a $28m FARM project of IFAD and a $22m rural development project of KOICA.

• Myanmar’ location overlaps major trade and economic corridors in Asia, implying potential for it to develop into a key point-of-origin and transshipment hub in international rice trade.

• The surge in exports has been supported by a more open trade policy. Key reforms include: (i) reducing (and then suspending) export tax from 10% to 2%; (ii) unification of official and parallel currency markets; (iii) removing minimum export prices, permit requirements for transporting rice to areas near the border, and requirements for exporters to maintain in stock, 50% of the rice for which an export license is sought; (v) removing priority privileges of RSCs in issuing export licenses.

• Growing demand for rice from China which is expected to import a total 4m tonnes of rice by 2020. Trade will be bolstered by the recent rice border trade agreement reached between the two Governments.

• Inadequate investments in upgrading rice mills: most are old and inefficient, comprising outdated processing units which achieve 15-20% losses in quality and quantity and an average milling ratio below 60%.

• Growing competitive threats from Cambodia & Vietnam, which are modernising their rice sector and diversifying into higher-value markets.

• Myanmar rice is sold at a discount due to location, low quality and risks (e.g. perceived inferiority given mixing of varieties). Only $330-$340/ tonne is earned compared to $545/ tonne earned by Thailand for the same kind of 25% broken rice.

• The lack of Sanitary and Phytosanitary Measures (SPS) agreement with China impedes formal exports to complement informal border trade, which is subject to high uncertainty. Formal trade is also constrained by limited port capacity at Yangon Port and costly and slow export logistics. Total loading and port charges per 20,000-ton vessel are estimated at $145k at Yangon compared with $75k for Kakinada (India); $65k for Koh Sichang (Thailand); and $60k for HCMC (Vietnam), while the cost of export procedures is estimated at $8.5/ tonne compared to $0.05 in Vietnam and $0.10 in Thailand

• Private investment is deterred by distortive and unclear policies, with potential conflicts between export promotion, rice price stabilisation and food security objectives; and a high perceived risk that GoM may reintroduce ad hoc export bans in the event of a significant increase in domestic prices.

• Limited foreign investment, as under the new FDI laws, JVs in rice milling and trading require special approval from government.
5.2.3. Scope for GAFSP PrSW/ IFC investment in rice

Although global demand for rice is growing there has been a decline in demand for the low-quality rice which accounts for close to 95% of Myanmar’s recent exports. The opportunity for Myanmar to increase its rice production for regional and global exports will thus depend on its ability to diversify the type and quality of rice exports to include aromatic, jasmine, glutinous and parboiled rice. At present its competitiveness and ability to enter these higher value segments is limited by the low productivity and low quality of rice production at farm-level, inefficiencies and outdated state of the milling industry, inadequate and high costs of infrastructure, as well as policy uncertainty which deters private investment.

In light of these constraints, there is need for government/donor investment in a number of areas starting with investments to address bottlenecks in the supply of inputs, such as by supporting agribusiness investments in the seed industry. For instance, MOAI has reportedly leased ShweTaung Farm to a private company for five years for development of hybrid rice seed, while there are also reports that a few private players have started to provide farm machinery rental services, indicating the potential to partner with the private sector for delivery of appropriate and farmer-responsive technologies.

Given inadequacies in post-harvesting facilities and the antiquated state of rice mills, there is also need for investments in modern and efficient equipment and facilities for drying, milling and storage. Of the 1,362 mills identified as being in operation in 2013, 348 of these were between 30-64 years of age and 68 were over 65 years old. Only 64 rice mills were suitable for the production of super 5% to 100% (grade A) and 265 rice mills for 15% to 10% (grade B), with almost half of the total, 640 rice mills, suitable for 25% broken milling, and 393 rice mills for 35% broken milling.

Our desk-based research indicates that a number of challenges have impeded private sector involvement in the required investment to date. For instance, side selling and loan defaults have limited the viability of contract farming – of the 50 contracted ventures undertaken by RSCs, offering contracted rice cultivation, only three were in operation as of 2013. A lack of transparency regarding the investment laws have also reduced foreign investor interest. For instance, three of the ten largest Thai rice exporters are reportedly investing in rice mills in Cambodia, while others are considering Vietnam – virtually all are reported to be unwilling to invest in Myanmar.

Nonetheless, there have been some recent signs of private sector activity in the sector. For instance, a joint venture between French firm, Societe Industrielle Agricole et Commercial D’Outre Mer, and XY Trading was recently approved by the MIC, to establish a white and parboiled rice mill in Ayeyarwaddy’s Hinthada Township. The available reports suggest that a second joint venture involving Thailand’s CP Intertrade, to build a white rice mill in Naypyitaw is also under consideration. The Singapore listed group, Wilmar, is also planning to undertake investments in rice.

In terms of the domestic players:

- **Diamond Star**, the country’s largest exporter which is sole supplier to Louis Dreyfus, has planned to build a large rice polishing factory, in addition to investing in a rice loading port in Thilawa.

- **MAPCO**, the publicly-owned company, is reported to be undertaking the Integrated Rice Complex project, which encompasses 15 individual projects to be completed by 2020. Each
The project will comprise white and parboiled rice mills, dryers, storage, a rice bran oil plant, a rice noodle factory, and a rice husk-fired generator. MAPCO also plans to construct Agribusiness Service Centres at ten sites in Lower Myanmar, with the objective of leasing tractors, harvesters, driers etc. to farmers.

- **Green Land Agricultural Cooperative Society**, one of the largest rice traders is said to be expanding milling and polishing capacities.

Overall the size of the rice sector makes it possible that there could be some interesting investment opportunities for consideration by GAFSP PrSW/ IFC. There is also some evidence that some international and local businesses are starting to consider projects in the sector.

### 5.3. Beans and Pulses

Myanmar is the third largest producer of pulses globally, after India and Canada, with around 5.4m tonnes produced in 2013. Within Myanmar, pulses represent the third largest crop sector after rice and sugarcane (in terms of tonnes produced), accounting for 15% of domestic agriculture output and the second largest share of the harvested area, following paddy. Total area under pulses was estimated at 4.5m Ha by 2010-11, a large proportion of which is located in the delta and dry zones. However, yields lag behind the top producers, with USDA data (2015) indicating that average pulse yields range between 0.7 – 1.3 m tonnes per Ha.

**Figure 5.2: Pulses production in Myanmar**

![Production of Pulses (million Tonne)](image)

**Source: FAOstat**

As the charts below indicate, according to FAOstat data there has also been a significant increase in production of beans, growing from 1.8m tonnes in 2003 to an estimated at 3.7m tonnes in 2013. The increase appears to have been largely driven by an initial expansion in land planted with beans, given that yields have remained relatively low, exhibiting only a marginal increase in recent years.
Production of beans and pulses is mainly carried out by smallholders on 1-2 Ha farm sizes. Over 20 varieties of beans and pulses are produced, most of which are solely for export markets given the relatively low level of domestic consumption. Matpe, green mung bean, and pigeon pea are identified as the main crops, with matpe production estimated to be two times higher than that of the green mung and pigeon pea, according to Thura Swiss, 2013. Combined with chickpea, these four crops collectively represent almost 90% of the total production of pulses (OECD, 2014).

Pulses represent by far the largest agricultural export item in Myanmar; the country ranks as the second largest exporter of pulses globally after Canada. Exports were valued at $1.2bn in 2012-13 (CSO, 2013). In addition to black gram (matpe), green gram (green mung bean) and pigeon beans, the main export varieties also include kidney beans and cowpeas. India accounts for more than 70% of Myanmar’s beans and pulses exports; while other key markets include UAE, Thailand, Bangladesh and Japan. Most of the beans sent to India are classed as being of ‘Fair Average Quality’, while special quality and first quality production is directed to markets such as Korea, Japan and China.

We have not found any specific government policies for beans and pulses, the sector is targeted under broader agricultural strategies. In particular, the 20-Year Development Plan in the Agricultural Sector (2011-12 to 2030-31) highlights the importance of increasing production of advanced value-added agricultural products from pulses, with the objective of developing an agro-based industry.

A small number of donor programs are also identified as targeting the bean and pulses sector. For instance, ACIAR and JICA are planning support for pulses production in the Central Dry Zone (CDZ). ACIAR will undertake R&D and extension activities in terms of soil/ water quality/ crop, as well as providing training to extension workers, students and farmers regarding measurement of soil water retention capacity. In addition, beans and pulses are supported under the World Bank’s ASDP, as part of the project’s focus on quality seed production through developing farm-based seed multiplication infrastructure and facilities and strengthening seed supply chains, as well as its emphasis on crop diversification.

5.3.1. Overview of the beans & pulses value chain
<table>
<thead>
<tr>
<th>Key constraints</th>
<th>No breeding research on improved varieties of green or black gram. Limited R&amp;D of post-harvest treatment techniques for pulses.</th>
<th>Lack of large-scale agribusinesses which can invest in better seeds and technologies. Lack of quality control in the type of seeds Limited access to improved seeds, with a lack of quality seeds adapted to local growing conditions.</th>
<th>Lack of access to improved technology. Limited access to credit. Short time frame between paddy harvest and sowing of pulses. Spread of mungbean yellow mosaic virus Limited information on pest management.</th>
<th>Limited funding for post-harvest technology. Minimal processing at farm-gate. Weak regulations; lack of quality control. Lack of value added processing capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public sector</td>
<td>DAR; DOA; YAU</td>
<td>DOA; MAS</td>
<td>DI; AMD; MADB</td>
<td>MOC; UMFCCI – MPBSSMA; MAGDPL; Quality inspection: SGS; MITS; OMIC</td>
</tr>
<tr>
<td>Private sector</td>
<td></td>
<td></td>
<td></td>
<td>Local traders; rural companies; Yangon traders; large wholesalers; warehousing companies Singapore based companies (traders) Exporters: Ayeyar Hintar Trading Trading: CDSG; Toe Tet Linn Co.</td>
</tr>
<tr>
<td>Donor interventions</td>
<td>ACIAR &amp; AVRDC</td>
<td>WB ASDP; ADB Agriculture, Natural Resources &amp; Rural Development, 2014–2017</td>
<td>ACIAR; JICA; WB ADSP; IFAD COSOP; ADB Agriculture, Natural Resources &amp; Rural Development, 2014–2017</td>
<td></td>
</tr>
</tbody>
</table>
### 5.3.2. Strengths and weaknesses of the beans & pulses sector

#### COMPETITIVE STRENGTHS

- Pulses are suitable for integration into rice-based cropping systems in the Delta and in diversified systems in the Dry Zone, to help control weeds, diseases, insects and improve soil textures. Production is also relatively more profitable than rice during the summer season in the Dry Zone.

- GoM is granting rights to develop virgin and fallow lands for cultivation of pulses. Reports suggest that contract-based cultivation has also been introduced for pulses.

- Marketing strengths include presence of a large number of traders (including Singapore based companies with international market linkages).

- Grading and sorting facilities are relatively advanced, with basic processing undertaken by large wholesalers in plants near Yangon before export.

- Potential growth in domestic market, driven by rising local consumption and demand from the feed industry (fish, dairy and poultry).

- Myanmar is positioned close to large and/or high-value markets. The development of Kyauk Phyu Special Economic Zone, which includes a sea port, will improve transport links to India and also connect Myanmar with Bangladesh and Middle East markets, which have high local consumption and demand of beans and pulses. The $214 Kaladan Multi-Modal Transit Transport Project, expected to be completed in 2015, aims to further boost bilateral trade between India and Myanmar.

#### COMPETITIVE WEAKNESSES

- Yields are low relative to potential; key issues: (i) deteriorating seed quality, particularly for pigeon pea; (ii) limited quality control due to lack of standardisation in the type of seeds; and (iii) high prices and/or limited availability of high quality seeds.

- Although 27 companies were reportedly set up to provide direct support to the sector, their impact has been diminished by concerns around profitability.

- Lack of available finance for production and marketing is also a constraint – domestic traders are dependent on financing from international traders such as from Singapore.

- Complex supply chain, in which farmers rely on middlemen to make deals with large wholesale traders; logistic costs are high for wholesalers to transfer commodities from rural companies to trade centres and warehouses in Yangon.

- Efficiency loss and lower realisation of value in processing, which is undertaken entirely at the wholesale level: (i) farmers lack funding and technologies for even basic processing at the farm-gate such as cleaning and sorting of beans; and (ii) secondary processing facilities are minimal and limited to dry packaging. Only 5-10% of 1m tons of beans and pulses exported annually undergo processing.

- Exports are highly dependent on India which purchases on an “as-need” basis, resulting in volatile and unpredictable demand. India’s monopsony also means that it significantly influences trade prices. Further, there is growing competition from efficient and mechanised farms in Australia and Canada, which have increased their share of the Indian pulses market.

### 5.3.3. Scope for GAFSP PrSW/ IFC investment in beans & pulses

Despite the volatility in year-to-year demand, it is expected that there will continue to be strong demand for beans and pulses from the Indian market, whilst there is also scope for Myanmar to further capitalise on its proximity to Bangladesh and China - at present, even after taking into account unofficial border trade, rough estimates suggest that Myanmar contributes less than 20,000 tonnes to China’s total 750,000 tonnes of imports of pulses. Further, there is potential for growth in the
domestic market fuelled by both, increasing domestic consumption and demand from the feed industry.

As has been highlighted above, Myanmar’s ability to capture a higher share of growing world demand will depend on critical investments to improve on-farm productivity, and value-add of production. In this context, there may be scope for investments to help promote private sector involvement in the production of beans and pulses, by supporting contract farming and a cluster development approach. Reports indicate that such initiatives have the potential to increase area under cultivation by 5% and improve yields by 25%.

There is also potential to support the development of value-added processing activities, including canned packaging and development of consumer products; (e.g. soup mixes, dehydrated powders, gluten free flour, precooked frozen products, stews and snack food), with the objective of reducing dependence on Indian demand and diversifying into higher-value markets such as EU, US and Middle East.

While there is some potential to develop the sector, it is not clear from the desk-based research that there are many large private sector firms operating in the beans and pulses sector that could partner with GAFSP PrSW/ IFC, nor is there much evidence that there has been much large commercial investment in the sector in recent years.

5.4. Horticulture

Around 15% of rural households in Myanmar are estimated to earn some income from producing horticultural products. The sector has benefited from an increase in urban demand – driven by rising incomes – and has also started to tap into the potential for exports to neighbouring countries.

The charts below present key trends in production of fruits and vegetables. Given the declining trend in yields, the expansion in the production of vegetables appears to have been supported by an increase in the agricultural land harvested. In comparison, fruit production is lower and has been steadily declining since 2008, despite having a relatively larger area under production than vegetables. Both, the area harvested and yields of fruits have been stagnant in recent years. Overall, FAOStat data indicates a total production of 3.4m tonnes of vegetables and 1.3m tonnes of fruit in 2013, accounting for 256,000 Ha and 360,000 Ha of land under production respectively.

Figure 5.4: Vegetables production in Myanmar

Source: FAOStat

![Vegetables production in Myanmar](image-url)
Horticultural crops are grown across the country, the hilly zones of Shan State and other border regions particularly account for a large share of production. In general, the high value and low land requirements are found to make horticulture farming particularly viable for landless/near landless households. For instance, onions, garlics and potato fields have an average size of around 0.6 Ha, while plots sown with vegetables and cut flowers range between 0.24 - 0.28 Ha. The table below presents detail on the five largest fruits and vegetable crops grown, based on data from 2009-10.

<table>
<thead>
<tr>
<th>Fruit</th>
<th>Sown Area (Ha)</th>
<th>Total Production (tonnes)</th>
<th>Vegetable</th>
<th>Sown Area (Ha)</th>
<th>Total Production (tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mango</td>
<td>79,228</td>
<td>482,235</td>
<td>Tomato</td>
<td>110,450</td>
<td>1,317,783</td>
</tr>
<tr>
<td>Orange</td>
<td>14,156</td>
<td>297,815</td>
<td>Onion</td>
<td>72,116</td>
<td>1,016,980</td>
</tr>
<tr>
<td>Pineapple</td>
<td>21,054</td>
<td>242,623</td>
<td>Potato</td>
<td>38,043</td>
<td>551,906</td>
</tr>
<tr>
<td>Tamarind</td>
<td>18,468</td>
<td>123,080</td>
<td>Cabbage</td>
<td>29,066</td>
<td>402,094</td>
</tr>
<tr>
<td>Lime</td>
<td>17,582</td>
<td>50,052</td>
<td>Cauliflower</td>
<td>25,184</td>
<td>323,699</td>
</tr>
</tbody>
</table>

While traditionally, fruits and vegetables have been mainly exported to China, Myanmar has recently targeted markets such as Singapore, Malaysia and Thailand. For instance, dried chilies and onions are now exported to China, Thailand, India, Malaysia, Indonesia. In addition, the Myanmar Fruit and Vegetable Producers and Exporters Association (MFVPEA) has indicated that England, Germany, Japan and South Korea are interested in importing fruits from Myanmar. Available data on the sector is quite limited, but an estimate by Advance Consulting (2014) estimates that vegetables exports totalled $818,820 in 2013.

The sector is supported under agricultural policy frameworks such as the 20-Year Development Plan in Agriculture Sector. There are also a small number of examples of donor support for horticulture. For instance, KOICA has funded construction of a facility to provide training on post-harvest
techniques (e.g. packaging and quality inspection), with the objective of preserving quality of fruits such as mangoes, mango, longan, pomelo and dragon fruits.

### 5.4.1. Overview of the horticulture value chain

<table>
<thead>
<tr>
<th>Key constraints</th>
<th>Research and development</th>
<th>Inputs and farmer services</th>
<th>Production</th>
<th>Post-harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low capacity of VFRDC.</td>
<td>Need to improve pesticide registration and control. Weak extension services, e.g. to disseminate improved technologies.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Public sector</th>
<th>DAR; YAU; DOA - CARTC; MAS ; VFRDC</th>
<th>CARTC; MAS; VFRDC; MFVPEA</th>
<th>MADB; DOA – Horticulture Department; Horticultural Crop Producers Association</th>
<th>MOC; DAP; UMFCCI – MFVPEA; MOAI; Horticultural Crop Producers Association</th>
</tr>
</thead>
</table>

| Private sector | | | | |
|----------------| | | |
| | | | |

| Donor interventions | KOICA – PTTC Project; GIZ - Capacity Strengthening for Private Sector Development in Myanmar; FAO - Village level Food Processing Empowerment through Enterprise Skills Development | FAO - Production of Certified Fruit and Vegetables for Export from Lao PDR & Myanmar through Integrated Supply Chain Management; FAO - Production of Certified Fruit and Vegetables for Export from Lao PDR & Myanmar through Integrated Supply Chain Management; | | |
5.4.2. Strengths and weaknesses of the horticulture sector

<table>
<thead>
<tr>
<th>COMPETITIVE STRENGTHS</th>
<th>COMPETITIVE WEAKNESSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Favourable climatic and agro-ecological conditions for horticulture production.</td>
<td>• Most vegetable seeds are imported (typically, more costly hybrids); with limited capacity for the authorities to test and certify imports.</td>
</tr>
<tr>
<td>• Rising income and urbanisation is expected to drive rapid sector growth; diversification into higher-value horticulture has potential to increase returns per acre for small farmers and the landless, by two- to ten-fold.</td>
<td>• Constraints to vegetables production relate to the selection of suitable varieties for each growing season and location. Research and extension services are still inadequate, owing to shortage of trained personnel.</td>
</tr>
<tr>
<td>• Cash crops fetch a higher market price relative to commodities such as rice.</td>
<td>• Post-harvest losses of fresh produce estimated at between 25-40% due to factors such as: (i) improper time of harvest; (ii) inadequate post-harvest technologies and treatment, processing and storage facilities, impeding consistency in quality; (iii) high transport costs.</td>
</tr>
<tr>
<td>• The sector is supported by a number of public sector agencies; for instance: the DOA has set-up a horticulture department to promote crop diversification; and the Vegetable &amp; Fruits Research &amp; Development Center (VFRDC) conducts research, as well as producing seeds and providing extension services, while Central Agricultural Research and Training Centre (CARTC) also provides training in fruits &amp; vegetables production technologies to DOA’ extension officers.</td>
<td>• Limited development of processed food items due to lack of technologies, technical skills and investment; and limited opportunities to meet domestic and international demand. As of 2011, there was just one government owned food processing factory present.</td>
</tr>
<tr>
<td>• Planned development of loading and uploading facilities, commodity exchange centres and food processing complexes near the Chinese border could reduce post-harvest losses of perishable crops.</td>
<td>• Unsystematic methods for cultivation, harvesting and packaging; low quality and lack of certification (compliance with GAP and/or phytosanitary standards) restrict exports to Asia (e.g. South Korea) and EU markets, including for mangoes. E.g. fruits cannot be exported to the EU as Myanmar does not dispose of VHT14 machines for quality checks;</td>
</tr>
<tr>
<td>• Myanmar is diversifying exports to reduce its dependence on China. Producer associations such as MFVPEA have started to export agricultural commodities such as mangoes, produced in hilly regions and marketed in Singapore and Bangkok though Yangon airport, in order to improve producer prices.</td>
<td>• Policy constraints include land taxes of $5.7/ Ha for horticultural crops; agribusinesses have also indicated concerns around unpredictable export restrictions and continued land controls.</td>
</tr>
</tbody>
</table>

5.4.3. Scope for GAFSP PrSw/ IFC investment in horticulture

Myanmar’s horticulture sector is very small but has the potential to tap into the growing world demand – global trade in processed and unprocessed fruits and vegetables is projected to increase to $60.2bn by 2019. Realizing this potential growth will depend on improvements in quality of production driven by investment across the value chain from building up a local supply of quality seeds to developing post-harvest capacity, including cold storage packing houses, cool chain facilities and logistics.

While still limited, private sector involvement in horticulture appears to be growing. For instance, some agribusinesses are getting involved in producing vegetable seeds. While, the Northern Royal
Jade Company, partly financed by Chinese investments, has obtained a 12,000 Ha concession near Hkaya village, part of which includes a banana plantation. MIC has also approved a joint venture between the Japanese agricultural company Megumi No Sato, and Myanmar’s City Mart Holding Co. to cultivate fruit and vegetables in the Mandalay region.

The desk-based research suggests that there may be scope for GAFSP PrSW/IFC to partner with the private sector to support contract farming operations and/or supply chain integration. Contract farming is seen as particularly viable for perishable products that have to be processed or shipped quickly. Key developments in this area include a venture between PepsiCo (Thai) Trading and Myanmar’s Diamond Star Group to export potatoes from Shan State to Thailand. Capital Diamond Group has established a $500,000 modern storage facility in Aung Ban, with a target to eventually export up to 100,000 tonnes of potatoes annually. It is also aiming to develop a new supply chain for the local potato market and has initiated contract farming, whereby it provides farmers with fertilizers, seeds and insecticides, as well as requiring them to move to the Atlantic variety of potato (which is reported to have double the yield of local varieties). Capital Diamond Star also offers a premium of almost 30% to farmers, in order to ensure supply.

In addition, investments could support agribusinesses to capture higher value through development of processing activities such as canning, fruit drying, packaging etc. A recent study estimates that the implementation of industry-focused initiatives in Myanmar could generate additional export revenues of $1.2bn in 2023 from processed fruit and vegetable exports, assuming 40% of production is exported in the form of value-added products. Some agro- and small-scale processors are already reported to be producing red wine based on table type of grapes, albeit in small marketable volumes. In general though, small suppliers appear to be at a disadvantage, given the demanding process standards for some high value horticulture crops in export markets and the fixed cost of certification – indicating that investment opportunities may be better targeted at more large-scale agribusinesses.

5.5. Coffee

Coffee is a relatively small sector in Myanmar. It is harvested on around 12,500 Ha of land, compared to crops such as tea which is produced on 79,000 Ha and sugar which is produced on 158,000 Ha. Overall, FAOStat estimates that total coffee production in 2013 was just over 8,000 tonnes and that the sector contributes approx. $9m to GDP.

There are a small number of commercial plantations in Myanmar, such as two estates owned by an entrepreneur called Tint Soe Lin – one a 120 Ha estate that is under production and a plan to have a 400 Ha farm producing coffee by 2018. Other commercial producers include U Than Aung, which has a 40 Ha plantation growing mainly Arabica coffee in Northern Shan State and Blue Mountain coffee which has a plantation of around 28 Ha, located in Mandalay.

Around 80% of coffee is produced by smallholder farmers on small plots (0.4 Ha) with approximately 25,000 smallholders involved in production. Smallholders are typically growing coffee alongside a variety of other crops such as fruits and vegetables (and also poppies - there are a number of reports that smallholders are increasingly substituting their production of poppies in order to produce crops such as coffee and rubber). Smallholder production is unorganised; there are few cooperatives/farmer organisations in the sector.
Coffee production in Myanmar is currently geared towards the domestic market. The available data suggests that around just 50 tonnes of coffee is exported each year. Thus, although there are various reports about international coffee firms, such as Green Mountain Coffee, exploring the potential to source supply from the country the export market is yet to develop.

The coffee sector has been growing in importance for Myanmar over the last decade. The growing rate of substitution in Asia from tea to coffee, combined with the growing middle-class in Myanmar that are demanding coffee has supported the recent growth. The growth of the sector is constrained by low yields: according to FAOStat the country achieves around 0.6 tonnes per Ha, which is significantly lower than Vietnam which achieves 2.2 tonnes/ Ha. However, the quality of production is rated highly. Coffee is graded on a scale of 1 to 100, with products needing to score higher than 80 to be speciality coffee. Myanmar’s coffee is believed to be over 80. According to the Specialty Coffee Association of America, Myanmar’s coffee crop has the potential to qualify as “premium and specialty coffee” but current production methods yield a very inconsistent product.

*Figure 5.6: Coffee production in Myanmar*

Source: FAOStat

Arabica coffee, high in quality and value, grows mainly in the northern states of Myanmar including Shan States, Mandalay Division, Chin State, Kachin State, Kayin State, Bogo Division, Rakhine State and Mon State because of ideal climate conditions such as red soil plateaus, elevations greater than 1000 meters above sea level, well distributed rainfall and a distinctive dry season. Robusta, the lower quality and lower value alternative to Arabica coffee is suitable to be grown in warmer climates at lower elevation and is thus grown mainly in the southern regions of Myanmar. Given the southern location of Yangon, Myanmar’s largest port, most of the coffee reaching international markets via the Yangon port is of the Robusta variety. Conversely, the higher quality Arabica coffee is often sold to Chinese buyers at prices lower than commercial value due to low bargaining power of the unorganized suppliers.
### 5.5.1. Overview of the coffee value chain

<table>
<thead>
<tr>
<th>Key constraints</th>
<th>Research and development</th>
<th>Inputs and farmer services</th>
<th>Production</th>
<th>Post-harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inadequate farmer skills, training and knowledge.</td>
<td>Low quality seed imported from China due to lack of quality standard specifications. Insufficient access to capital.</td>
<td>Cultivation requires detail and precise technique to achieve high quality.</td>
<td>Low bargaining power in border trade with China due to lack of community level organization. Arabica plantations are far from international port Poor infrastructure networks. Lack of consistency in production can reduce quality.</td>
<td></td>
</tr>
<tr>
<td>Coffee Research Centre in Pyin Oo Lwin, DOA, CRIETC</td>
<td>MFE, CRIETC</td>
<td></td>
<td>CRIETC</td>
<td></td>
</tr>
<tr>
<td>SCAA</td>
<td>Myanmar Agri-Tech Ltd</td>
<td>80% smallholder farmers (0.4 Ha) Tint Soe Lin (120 Ha); Lone Star Coffee (40 Ha); U Than Aung (40 Ha); Blue Mountain (28 Ha); Sithar Coffee Co. (2 Ha); Genius coffee; Myanmar Agri-Tech Ltd</td>
<td>Commercial exporters at Yangon Port; Genius coffee (produce for local market); Irrawaddy (coffee roasters and export); Lone Star Coffee (process mainly for local market); CDSG</td>
<td></td>
</tr>
</tbody>
</table>
## 5.5.2. Strengths and weaknesses of the coffee sector

<table>
<thead>
<tr>
<th>COMPETITIVE STRENGTHS</th>
<th>COMPETITIVE WEAKNESSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Ideal cultivation climate including: adequate rainfall, meters above sea level &gt;1,000, latitudinal location between 20°-24° N, distinct dry season, slight slope &lt;15% incline.</td>
<td>• General perception of Myanmar as low quality coffee exporters in world market.</td>
</tr>
<tr>
<td>• Potential for qualifying as specialty coffee designation as determined by SCAA.</td>
<td>• Low global awareness of potential for high quality Myanmar Arabica.</td>
</tr>
<tr>
<td>• Coffee crop is well suited to remote environment because it is non-perishable and transports easily across poor transportation networks without damage.</td>
<td>• Long distance from high quality growing region to main international trade centre.</td>
</tr>
<tr>
<td>• Direct access to Asian coffee market: fastest growing coffee market in the world.</td>
<td>• Lack of skills in coffee processing and limited domestic capacity to taste and grade production.</td>
</tr>
<tr>
<td>• Entire country suitable for coffee plantations as different climates have different crop specialties.</td>
<td>• Rainfall in Pyin Oo Lwin (popular Arabica growing centre) is only for 6 months instead of the ideal 7-9 months, so irrigation may be required for higher quality.</td>
</tr>
<tr>
<td>• GoM committed to loan assistance, land preparation assistance, coffee and shade tree seedling provisions, fuel subsidy for fertilizer, technical support, clean water supply, land settlement concessions over 25 year lease.</td>
<td>• Low productivity compared to neighbouring Vietnam.</td>
</tr>
<tr>
<td>• Much of coffee production is carried out organically giving opportunity to price at a premium.</td>
<td>• Farmers are uneducated in cultivation techniques.</td>
</tr>
<tr>
<td></td>
<td>• Low supplier power because of poorly organized farmer cooperatives.</td>
</tr>
<tr>
<td></td>
<td>• Poor quality seeds imported from China.</td>
</tr>
<tr>
<td></td>
<td>• Lack of adequate infrastructure, electricity (plantations often reliant on self-generated hydroelectricity).</td>
</tr>
</tbody>
</table>

## 5.5.3. Scope for GAFSP PrSW/ IFC investment in coffee

According to the available reports Myanmar has the growing conditions in place to facilitate the development of a large coffee sector. In particular it has ideal growing conditions for both the higher value Arabica and Robusta varieties.

However, the sector is at a nascent stage, with most production carried out by smallholders and only a few commercial firms in the sector are too small for a GAFSP PrSW/ IFC investment. Further, the country has yet to develop much of an export market and there is uncertainty around the potential of the sector to compete in the coffee export market.

However, there are reports that international investors/agribusinesses are beginning to explore the potential to invest in the market. For instance, Green Mountain Coffee has reportedly explored the
potential to purchase green coffee from farmers as part of a project that is being led by Winrock International (a non-profit organisation) to develop the coffee sector in Myanmar. In addition, a Singapore-listed company is partnering with eD&F Man Holdings (a global agricultural commodities company) in a $20m investment over four years to produce Robusta coffee for export markets on 3,700 Ha of land in the Ayerwaddy Division of Myanmar. Thus, there may be some interesting investment opportunities to consider alongside companies seeking to enter the sector.

5.6. Sesame Seed

Myanmar is the world’s leading producer of sesame seed, with production totalling 890,000 tonnes compared to the next highest producing country India, which produces around 770,000 tonnes. Sesame contributes an estimated $600m to Myanmar’s economy.

While sesame is widely consumed across Asia, particularly China and Japan, Myanmar contributes only 3% to international sesame trade. Instead, most production is consumed domestically. Sesame is an important part of the local diet in the form of snacks, flavouring, and cooking oil and is also used as livestock feed. According to FAOStat data, just 38,000 of the 890,000 tonne production was exported in 2012; the country made around $37.5m in export earnings. Part of the reason why exports of sesame are low, is that the quality of local production is not sufficient for international exports.

Sesame seed is grown on over 1.5m Ha of land, with production dominated by smallholder farmers growing on plots typically ranging from 0.9 Ha to 1.5 Ha. Production takes place almost exclusively in Mandalay, Sagaing and Magway. These regions are located in Myanmar’s Central Dry Zone, which is highly conducive to sesame seed cultivation as the seed can be planted and harvested throughout the year. A wide variety of seeds are native to these regions including higher quality black seeds, consumed frequently by the Japanese, and white, red and mixed seeds which are often pressed into sesame oil or consumed whole.

As shown below, exports of sesame increased significantly after the GoM removed the export ban on sesame in 2006, but have since returned to near export-ban levels. Further, sesame crop yields have been stagnant for a number of years averaging around 0.5 tonnes per Ha. Myanmar’s yields are estimated to be higher than the global average, but there is some scope to increase them, as according to FAOStat they are significantly less that crop yield rates in neighbouring China, which achieves nearly 1.5 tonnes per Ha.

Figure 5.7: Sesame production in Myanmar

![Chart showing sesame production in Myanmar](Source: FAOStat)
5.6.1. Overview of the sesame seed value chain

<table>
<thead>
<tr>
<th>Key constraints</th>
<th>Research and development</th>
<th>Inputs and farmer services</th>
<th>Production</th>
<th>Post-harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low availability of farmer training and skills development. Limited research investment by GoM resulting in stagnant yield improvements.</td>
<td>Low quality seed, low availability of fertilizer. Extremely limited access to finance, sesame not priority of MADB. Without land ownership, no collateral available for loans.</td>
<td>Weak extension services. Farmers are not competent in required production standards for international markets.</td>
<td>Inadequate milling and processing infrastructure. Worn out local or Chinese expellers that need replacing. Absence of quality testing facilities.</td>
</tr>
</tbody>
</table>

| Public sector | DAR, MOAI, MOLF | MADB, MOLF, state owned pawn shops | MOAI | UMFCCI, MOAI |

| Private sector | FIDSL (built with aid from JICA), FDA, OMIC Myanmar | Private pawn shops, contract farming | MPBSSMA, interest from Dutch private sector | Toe Tet Linn Co., Ltd, Seven Golden Lions Enterprise Ltd., MFVPEA, MPBSSMA |

| Donor interventions | FAO, RVO, NEOQCL, OPEC OFID, FIDSL | NEOQCL | JICA, OPEC | FAO, NEOQCL |

5.6.2. Strengths and weaknesses of the sesame seed sector

<table>
<thead>
<tr>
<th>COMPETITIVE STRENGTHS</th>
<th>COMPETITIVE WEAKNESSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Sesame is efficient at producing oil: 50% of the seed can be converted to sesame oil with quality expeller presses. While sesame oil is not currently exported by Myanmar, it commands a high price in international markets.</td>
<td>• Currently only captures 2% of the value chain through exporting sesame in raw seed form. With better expeller equipment, Myanmar could produce sesame oil in-country and capitalize on higher margin sesame oil.</td>
</tr>
<tr>
<td>• Wide range of diverse sesame seed types that are native to the region, leading to market diversification; high value black seed imported by Japan, other moderate quality seed imported by China.</td>
<td>• Lack of irrigation facilities means that the region is dependent on adequate monsoon season.</td>
</tr>
<tr>
<td>• Ideal cultivation climate with monsoon season providing residual water for dry season.</td>
<td>• Lower yields than higher exporting countries such as China, Ethiopia, Uganda, Tanzania.</td>
</tr>
</tbody>
</table>
Crop requires limited input intensity with low usage of fertilizer and high yielding varieties.
Pre-monsoon irrigated sesame has highest gross margin of any oilseed crop.
Quick turnover between seed planting and harvest, resulting in flexibility to respond to changes in demand.
Domestic demand for vegetable oil is expected to increase as incomes increase; current consumption is below world average.
Traders, collectors, commodity exchange centres work cohesively and efficiently in private sector, without need for donor/government intervention.

Inadequate, outdated milling and processing infrastructure.
Electricity shortage reduces ability to clean/process sesame.
Existing stock of expeller machinery is of poor quality.
Non-existent country-wide quality standards for sesame oil result in inconsistent quality, making oil unfit for export to EU and other developed markets.
Oil is often mixed with other cheaper oils and mislabelled leading to low perception of quality and not meeting global safety standards.
Containers used for transport are often used for transporting chemicals contaminating production.
Lack of testing institutes to determine quality.
Former government price controls have distorted market and previous ban on certain sesame seed exports have increased smuggling and illegal trade, lowering overall perception of quality.

5.6.3. Scope for GAFSP PrSw/ IFC investment in sesame seed

The oilseed sub-sector in Myanmar is an important part of the country’s agribusiness sector. Sesame accounts for around 50% of the total area dedicated to oil seed production; other important oilseed crops in Myanmar include sunflower, oil palm and groundnut.

There is some potential to expand the export industry for sesame seeds given Myanmar’s proximity to China and Japan, the world’s largest two importers of sesame, provided production volumes and quality can be increased.

According to the available reports, Myanmar also has the potential to add value to sesame seed exports if investment is made to upgrade its seed crushing infrastructure. At present, the country produces low quality sesame oil for which there is little demand in international markets. As a result, nearly all Myanmar’s exports are in the form of unprocessed seeds, which typically attract a price of $1,800 per tonne; whereas quality sesame oil can attract prices well above $4,000 a tonne. A KPMG report estimates that Myanmar captures only 2% of the value in its sesame supply chain and could increase export earnings by 500% to over $300m, if it improved the quality of its sesame oil production.

To achieve this, significant investment in sesame oil processing facilities is required. Currently, there is said to be strong interest from Dutch private sector investors to enter the Myanmar sesame market. But beyond this, it is unclear which are the private sector organisations operating in the sector that are of sufficient size to work with GAFSP.
Significant challenges in the regulatory environment also remain in the sesame sector. While GoM has recognized the development of edible oils as a national priority, it has committed little thus far to further develop the export industry. Previous price controls and export bans in the sector have distorted market functionality and has limited the ability for the private sector to invest. Although MADB funding exists for farmers, priority is given to paddy farming and thus sesame seed farmers have extreme difficulty accessing adequate financing. Additionally, irrigation systems that would increase land area suitable for sesame cultivation are currently devoted to paddy production, even though rice margins are significantly lower than sesame seed.

Efforts to increase sesame seed production and improve the quality of sesame include donor interventions such as from the OPEC Fund for International Development. The OPEC project is a $14m intervention that is working to support the production of certified seeds, assist 6,000 smallholder farms in improving yields and quality, and support the training of 31 post-graduate students in disciplines related to oil crop development. The project will also work to develop quality standards and testing facilities that meet ASEAN requirements. Without the development of the value-added market in Myanmar, it is unclear that commercial investment to increase sesame seed production is viable at this stage.

5.7. Milk

Although milk does not currently constitute a large portion of the typical diet in Myanmar, there is an expectation that as the trend towards an expanding middle class continues, so too will the demand for protein and nutrient rich cow milk, particularly for young children. As the country continues to see an increase in the urban population, it is expected that the demand for milk will continue to increase: dairy consumption is expected to double over the next eight years creating a large opportunity for domestic milk farmers to recover market share that is currently being served by lower priced, higher quality imported milk products.

At present, domestic producers do not have the capacity to meet domestic demand for milk. It is estimated that less than 50% of milk consumption is covered by local production, and that figure is thought to be falling. Much of the imports have come through Singapore via official and unofficial channels. Total imports are estimated to be around $40m, though the figure could be much higher because of the level of imports entering the country through the black market. Myanmar does not have much of an export market at the moment; the opportunity for the sector is to aim to substitute for imports.

Milk consumption in Myanmar is mostly in the form of sweetened, condensed milk which is used in coffee and tea. However, government has tried to encourage the consumption of Ultra-Heat Treated (UHT) milk to address issues related to malnutrition within the population. Much of the growth in recent consumption has been in UHT milk and other products such as condensed milk, evaporated milk, butter and cheese are imported into the country.

According to a study on the dairy sector by Wageningen UR (2014) total production of milk and dairy products is around 240,000 tonnes, with official imports put at around 55,000 tonnes and unofficial imports amounting to around 300,000 tonnes. This puts total domestic milk consumption at 600,000 tonnes per annum, which implies that around 10kg of milk and dairy products are consumed in

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Myanmar each year (the global average is over 100kg per year). The figures estimated by the Wageningen paper are significantly lower than official government statistics, which estimate that 1.3m tonnes of milk are produced in Myanmar each year, but this is inconsistent with the number of cattle that are reported to be in the country by government.

Domestic milk production in Myanmar is currently characterised by three farming systems:

- Smallholder farmers produce around 85% of milk in Myanmar. There are around 50,000 smallholders each of whom keep 2 or 3 cows. The milk produced by smallholders is milked by milk collectors, who pay the farmers for the milk.

- Medium-sized farms that keep around 20 to 40 cows. There are a small number of these farmers in Myanmar. They are able to give the cows some inputs (sufficient water, some agro-industrial by-products and they also receive some vaccination services from government).

- There are also around 200 commercial farmers in Myanmar, which each keep around 80 to 200 dairy cattle.

Most of the milk produced in Myanmar is in the Mandalay region, which has around 55% of the dairy cattle population. The remainder is found in and around Yangon and Naypyitaw. Total processing capacity in the country is also thought to be low, with around 50 plants producing sweetened condensed milk and 15 producing pasteurised milk. Local processing capacity is estimated to be around 150 tonnes per day.

5.7.1. Overview of the Milk value chain

<table>
<thead>
<tr>
<th>Research and development</th>
<th>Inputs and farmer services</th>
<th>Production</th>
<th>Post-harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of local knowledge in animal husbandry. No structural training on dairy farming available outside of Yangon universities.</td>
<td>Insufficient financing options for to support farmers’ access to inputs. During dry season, farmers run out of quality grass and instead feed cows with rice straw. Group credit is available but too small to fund livestock purchases</td>
<td>The majority of milking is done by hand rather than with milking machines. Small government extension services.</td>
<td>Poor infrastructure makes it difficult for perishable milk to be transported to or from rural areas. Milk handling of collectors is very poor: diseases spread easily between farms. Primary milk producers’ associations are not yet formed.</td>
</tr>
</tbody>
</table>
### 5.7.2. Strengths and weaknesses of the Milk sector

<table>
<thead>
<tr>
<th>COMPETITIVE STRENGTHS</th>
<th>COMPETITIVE WEAKNESSES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dairy consumption follows cultural tradition but has been inaccessible to low income families. As incomes are expected to double in the next 8 years, it is expected that growth in milk consumption will increase at a similar rate.</td>
</tr>
<tr>
<td></td>
<td>Relationships between farmers and milk collectors are long-term in nature, leading to effective informal contracts. In general, there exists good cooperation and coordination between supply chain participants.</td>
</tr>
<tr>
<td></td>
<td>Abundant agricultural resources and available land are suitable to dairy farming. Availability of protein rich sesame oilcakes fit for cow feed and grazing areas.</td>
</tr>
<tr>
<td></td>
<td>Government is committed to supporting the sector through the provision of funding for research and trying to provide free livestock vaccination and veterinary services.</td>
</tr>
<tr>
<td></td>
<td>The cost price of domestically produced milk is not competitive with imports primarily because of the high feeding costs (contribute around two-thirds of the cost price), which is due to a lack of availability and quality of fodder.</td>
</tr>
<tr>
<td></td>
<td>Productivity of milk production is very low due to insufficient quantity and quality of forage and water provision and the low genetic quality of existing stock. It is estimated that up to 60% of adult cows are not productive because of this.</td>
</tr>
<tr>
<td></td>
<td>Poor support infrastructure for the sector: milk is often collected on bicycles, motorcycles or public transportation without refrigeration and proper sanitary collection methods.</td>
</tr>
<tr>
<td></td>
<td>Health and hygiene standards are low: raw milk is packaged in recycled water bottles or plastic bags, collectors run their hands through...</td>
</tr>
</tbody>
</table>
5.7.3. Scope for GAFSP PrSW/ IFC investment in Milk

Although the availability of quality statistics on the sector is limited, the existing reports all suggest that demand for milk is growing in Myanmar. However, it is expected that the growth in dairy consumption will continue to be satisfied by imports, as domestic production does not have the capacity to meet demand and is not competitive with imports.

Overall the sector is at an early stage of development and needs considerable investment in better equipment, higher quality feed and fodder and quality testing methods amongst other things, to make the product more competitive against lower priced, higher quality imports.

Investments in the sector could have significant development impacts; for instance an FAO study found that one full time job can be created off-the-farm for each 30-50 litres of milk collected, processed and marketed. However, it is unclear from the desk-based research that there are many commercial businesses operating in the sector that could benefit from a GAFSP PrSW/ IFC investment. The few examples of commercial investments in the sector are foreign businesses that have entered the domestic market.

- For instance, according to the available reports the IFC has already discussed the potential to invest in Yoma, which has signed an MoU with PMM Partners Limited to form a joint venture to supply UHT milk to the domestic market as part of an estimated $46m investment. The group aims to produce and distribute 1.5m packs of milk per day, of which 0.5m will be sponsored by donors and distributed to the poor. In separate investments Yoma is also reported to be investing in cold storage and logistics facilities in a $12m project and in a commercial vehicle leasing business.

- In addition, a company called Dutch Mill a Thai dairy company, has reportedly begun to build factories in Myanmar to increase their capacity to serve both the local and other Asian markets.

5.8. Livestock

The livestock sector as a whole contributes 10% to Myanmar’s agricultural GDP and according to a USAID survey around 8% of workers in Myanmar draw their income from livestock. While the majority of livestock production and consumption is in poultry, there are several other subsectors in early stages of development such as cattle, swine and buffalo that play a number of livelihood and income-generating functions in the rural areas of Myanmar.

Total cattle holdings are estimated to be between 10m to 14m, with the number of pigs and goats estimated to be at around the same level. The dry zone of Myanmar is an important area for livestock production. Many of the farmers that keep cattle in the region do so to provide themselves with some protection from the adverse effects of draught/other extreme weather conditions.

Cattle and buffalo are used mainly for milk production, as the meat from these animals is often older and of lower quality than imported products. While swine is the second most important source of
meat after poultry, making up 30% of total meat output in Myanmar. More than 90% of swine production comes from small-scale farms, which typically have around two to four pigs; pig meat is an important source of local meat consumption for rural communities. The few commercial pig farms are located mainly in the Yangon region.

Over the past decade, GoM has created several policies and ministries aimed at improving the disease environment, increasing research and development of breeding, increasing trade and improving livelihoods of livestock farmers. Donor interventions in the sector seems to be quite limited relative to other sectors reviewed in this study.

5.8.1. Overview of the Livestock (non-poultry) value chain

<table>
<thead>
<tr>
<th>Key constraints</th>
<th>Research and development</th>
<th>Inputs and farmer services</th>
<th>Production</th>
<th>Post-harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Failure to completely monitor infectious diseases.</td>
<td>Difficult to spread information on best practices and disease control among 90% smallholder farmers. As feed makes up 70% of production costs, farmers often can only afford inadequate, disease prone inputs.</td>
<td>Limited use of technology to improve efficiency of swine production. Large number of intermediaries in supply chain, leading to low prices for farmers.</td>
<td>Lack of refrigerated trucks to transport perishable items that are highly susceptible to contracting disease. Rural areas lack organized market/auction system for smallholders to receive fair market price.</td>
</tr>
<tr>
<td>Public sector</td>
<td>MLFRD, Community animal health workers, LBVD, UVS</td>
<td>MLFRD, MFLDB for large scale farmers, LBS for small scale farmers, LBVD, LFME</td>
<td>MLFRD</td>
<td>MLFRD</td>
</tr>
<tr>
<td>Private sector</td>
<td>CP Livestock</td>
<td>CP Livestock, Commercial breeding farms in Daik U, Lashio, Htmebo</td>
<td>CP Livestock</td>
<td>CP Livestock</td>
</tr>
<tr>
<td>Donor interventions</td>
<td>JICA Animal Disease Control</td>
<td>FAO, JICA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5.8.2. Strengths and weaknesses of the Livestock (non-poultry) sector

<table>
<thead>
<tr>
<th>COMPETITIVE STRENGTHS</th>
<th>COMPETITIVE WEAKNESSES</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Recent improvements in artificial insemination and breeding are increasing efficiency and yield of livestock.

Increase in number of supermarkets in urban areas with proper refrigeration methods and labelling, increases the transparency of pork sales and reduces fear of disease.

Large scale private pig farms (>500 pigs) have adequate equipment levels, high efficiency rates and are well-managed.

Medium scale pig farms provide adequate quality feed, are sufficiently vaccinated and practice competent biosecurity.

Commitment from GoM to improving access to vaccinations, developing new IA processes, encouraging FDI.

Proximity to China and Mizoram State, India (province that is disconnected from mainland India through poor infrastructure and long distance), provide the potential for an increased export market.

As quality of pork is difficult to determine, all types are given equal price, removing the incentive to improve quality.

Low bargaining power of farmers due to limited scale, lack of centralized market in rural areas and presence of several intermediaries.

High transaction costs due to inefficient transportation methods and lack of cold chain storage equipment, large number of intermediaries, rural locations.

General uncertainty and unpredictability of disease environment in addition to religious views, limit demand from swine consumption.

Most small-scale farmers own slower growing Indigenous breed, not improved breeds, due to a lack of investment to develop genetic variety.

Hot, humid climates are unsuitable for raising pigs, rendering the majority of Myanmar unsuitable for swine production.

High occurrence of antibiotic and vaccinations by farmers without proper veterinarian supervision is leading to drug resistance among small-scale swine farms.

5.8.3. **Scope for GAFSP PrSW/ IFC investment in Livestock (non-poultry)**

Similar to the dairy and poultry sectors, demand for the other livestock related products is expected to continue to rise alongside population growth and the growing trend towards urbanisation in Myanmar. Therefore, there could be opportunities for investment in the sector to increase and modernise domestic production capacity to satisfy demand. With higher and more consistent quality meat, Myanmar could develop an export market for its swine producers, especially given the proximity of swine farms to markets such as India and China, where there is high demand.

However, given the nascent stage of the sector, it is likely in need of government and/ or donor investment to develop; for instance to carry out research in the genetic varieties most suited to the region; work to improve both awareness and adherence to standards to reduce the incidence of diseases; and investment to improve the provision of quality extension services to farmers.

It is not clear from the research that much of the required investment represents a commercial opportunity at this stage, which is in part reflected by the lack of commercial investment activity in the sector. The main organisation operating in the sector is CP Livestock of Thailand, which is involved in swine contract farming in Myanmar. It provides inputs to its farmers via short-term credit and takes repayment in-kind. The company is also involved in meat processing and trading. Beyond CP Livestock, it is unclear that there are many other potential private sector companies of the size and track-record to make them viable investment opportunities for GAFSP PrSW/ IFC. Overall, based on the desk-based research, the scope for commercial investment in the sector seems to be quite limited.
5.9. Poultry

Due to cultural and religious factors, poultry meat contributes to the largest share of meat consumption in Myanmar, with consumption of poultry products estimated to have increased at 15% per annum between 2012 and 2014 (FAO, 2015). Current consumption is estimated at 6kg/head/year of poultry meat and 40 pcs/head/year of egg, which is still very low relative to South East Asian countries such as Thailand (20kg/160pcs) and Malaysia (32kg/240pcs).

The chart below illustrates the significant expansion in chicken meat production, which reached 1.08m tonnes in 2013. Chickens accounted for around 91% of the total poultry population, estimated at around 169m birds in 2011. A more recent report by the RVO (2015) indicates that the poultry broiler population comprised 144m birds and poultry layer population, 8m birds as of 2014, with broilers accounting for 75% of chicken meat; followed by (semi-) post layers (15%) and (native) village chickens (10%).

*Figure 5.8: Poultry production in Myanmar (tonnes)*

Source: FAOStat

Poultry farming is concentrated in Shan State and Mandalay, Sagaing, Yangon, Bago, and Ayeyarwaddy Regions, in rice producing areas with abundant and less costly feed resources. It is typically integrated with other livestock keeping. The high value and low land requirements of poultry raising imply that it is suitable for landless/near landless households.

While traditional backyard poultry raising has traditionally dominated production, there has been a growing presence of modern commercial systems for broilers and chicken eggs production. In particular, contract farming has emerged as the main business model in broiler production, mainly led by Myanmar CP – a foreign-based vertically integrated company, part of the Thai-headquartered CP group – although other companies have also initiated such arrangements. Contract broiler farms are relatively small, with an average 3,000 birds. Egg production is based on a different business model, in which farmers receive advice from CP Company’s input sale unit (such as on feeding and health care), but produce eggs without contracts, selling them in the open market.

The overall market structure is highly concentrated. Myanmar CP and Japfa Maykha (another foreign-based company with a vertically integrated supply chain) combined, account for 70% of the total market share, with activities that include compound feed manufacturing; breeder farms; hatcheries; Day Old Chick (DOC) production; commercial broiler farming; and a slaughterhouse (Myanmar CP). Further detail on their operations is presented in Annex D.
While there does not appear to be a national-level strategic development plan for the poultry sector, it is targeted under the 20-Year Development Plan in the Livestock and Fishery Sector (2011-12 to 2030-31). For instance, policies under the Short Term Plan (2011-12 to 2015-16) seek to improve livestock production, control animal disease, produce required biological products against infectious disease and transfer of appropriate technical know-how to farmers; while broader agriculture sector policies also highlight priorities such as the development of the animal feed supply.

A few donor projects have targeted improvements in animal health; these include ACIAR’s research program into improving management, nutrition and health of village poultry in the central dry zone, as well as FAO-led support for controlling avian influenza. The Netherlands-Myanmar PPP was also recently announced earlier this year, whereby stakeholders from the Dutch poultry sector will support strengthening of Myanmar’s poultry sector such as through improving and expanding curricula of knowledge institutes, executing joint applied research, offering training programs and demonstrating best practices. The Netherlands Enterprise Agency is also undertaking the ‘Facility for Sustainable Entrepreneurship and Food Security: Sustainable and affordable poultry for all’ project to address limited competition in feed and poultry and increase production capacity, food safety and sustainability of the Myanmar poultry industry by introducing new technology and training methods. The project aims to increase supply of chicken meat by 18 million kg per year, equivalent to the annual consumption of 1m people, and generate income for about 6,700 people.

5.9.1. Overview of the poultry value chain

<table>
<thead>
<tr>
<th>Research and development</th>
<th>Inputs and farmer services</th>
<th>Production</th>
<th>Post-harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Key constraints</strong></td>
<td>Bottlenecks in feed supply (high prices; lack of qualified staff)</td>
<td>Poor knowledge of on-farm management (hygiene; best practices)</td>
<td>Low quality of frozen broilers and eggs.</td>
</tr>
<tr>
<td>Limited information on biosecurity.</td>
<td>Import tax on veterinary medicine &amp; inadequate animal health testing services.</td>
<td>Inefficient production.</td>
<td>High cost and lack of electricity.</td>
</tr>
<tr>
<td>Limited knowledge on prevention, control and contamination of disease.</td>
<td>Lack of local supply of DOC.</td>
<td>Animal disease; high mortality rates (8-12%) and low FCR (1.8-2.2) in open house broiler farms.</td>
<td>Lack of regulation on meat processing.</td>
</tr>
</tbody>
</table>

**Public sector**

- UVS; MLF
- LBVD; LFME; MLF; Livestock Feed Association
- LBVD; MLF
- MOC; MLF; LBVD; Broiler Association;

**Private sector**

- **Poultry feed:** Foreign firms – Myanmar CP (Myanmar C.P. Livestock Company; C.P. Seeds Company); Japfa Maykha; De Heus, New Hope and Sunjin; Japfa;
- Myanmar CP; Japfa May Kha; Crystel Diamond
- Broiler chicken commercial farms & DOC suppliers, Nay La, Kan Baw Za, MRC,
- Myanmar CP; Japfa
5.9.2. Strengths and weaknesses of the poultry sector

<table>
<thead>
<tr>
<th>COMPETITIVE STRENGTHS</th>
<th>COMPETITIVE WEAKNESSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Development of a national database of all commercial poultry farms and national surveillance programs will aid disease control planning efforts.</td>
<td>• Despite reported improvements in provision of animal health services by LBVD, key issues around safety and product quality remain due to (i) high antibiotics use; (ii) lack of awareness of biosecurity; (iii) lack of cooling; (iii) issues around contamination, short shelf life and high levels of micro-organism given slaughter practices; and (iv) laboratories operating below ASEAN/ international standards.</td>
</tr>
<tr>
<td>• Livestock Breeding and Veterinary Department (LBVD) is promoting indigenous poultry breeding in rural areas by providing breed stock and technical services.</td>
<td>• Key bottlenecks in the supply of inputs include: (i) import and commercial taxes on medicine and feed supplement additives, which have increased costs of livestock breeding and disease control, especially as a large share of raw materials (soybean, corn, wheat) for feed</td>
</tr>
<tr>
<td>• Relatively higher returns to land from broiler production than vegetable production near towns in areas such as Taungyi Township of Shan State. While farmers earn $1,500-2,000/ year/ acre from crop production, they can earn the same from broiler or egg production over just one and a half months. After taking costs into account, broiler</td>
<td></td>
</tr>
</tbody>
</table>
producers also earn double the rural daily wage per unit of labor and management invested.

- Increasing domestic capacity of poultry feed supported by entry of new foreign firms (e.g. De Heus, New Hope and Sunjin), investments in new mills by established firms (e.g. Japfa 2014) and expansion of existing facilities. There are also 3 government owned feed mills under Livestock Feedstuff and Milk Products Enterprise (LFME)
- Emergence of contract farming initiatives and commercial broiler farms such as May Kha and CP have driven significant expansion of the broiler market.
- Poultry demand is projected to grow more than two-fold from 6kg/y/h to 14kg/y/h in 2025, in line with an expanding middle class (expected to grow from 3m to 15m by 2025), rising consumption of animal protein rich products and processed food and increasing preference for chicken over other kinds of meat. Poultry meat prices are now lower than beef and pork in Yangon market.
- Market development of poultry meat will also be facilitated by expansion of domestic retail chains such as City Mart / Ocean and Sein Gay Har; as well as the growing presence of foreign retail chains such as CP Fresh Mart, Lotteria, KFC and BBQ Chicken.
farmers also receive long-term co-financing for construction. Myanmar CP then buys the broilers at market-determined prices, processing these into fresh meat and processed meats such as sausage and chicken balls. In addition to Myanmar CP and Japfa May Kha, there are also a few domestic players which appear to be vertically integrated including Crystel Diamond; Tet Chaung; and MRC.
6. **PRIORITY SECTORS AND NEXT STEPS**

In this report we have presented an overview of selected agribusiness sectors in Myanmar to identify the three to five sectors to take forward to the second phase of the project. In Phase 2 we will identify both the key stakeholders and specific investment opportunities that could be suitable for support from the GAFSP PrSW/ IFC in the priority sectors.

It is important to emphasise that this does not preclude any GAFSP PrSW/ IFC investments in the sectors not taken forward – we note in particular that some interesting cross-sector opportunities might present themselves during the country visit.

It is necessary to identify some priority sectors to guide the Phase 2 analysis. It is probable that through the process of consulting with multiple country stakeholders additional opportunities in non-priority sectors will be identified.

### 6.1. Approach to identifying the priority sectors

To identify the short-list we have reviewed each sector against five criteria, summarised in the Table 6.1. Each sector is scored out of five for each indicator – the maximum score possible is 55.

Table 6.2 sets out the data gathered for each of the sectors.
Table 6.1: Criteria and indicators used to identify priority sectors

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Indicators</th>
<th>Scaling approach used</th>
<th>Sources/ how measured</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development impact</td>
<td>Estimated number of smallholder farmers in sector</td>
<td>1: &lt; 50,000</td>
<td>FAOstat; USAID Feed the Future reports; Ministry of Agriculture Census; CEPA estimates</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2: 50,000 - 500,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3: 500,000 - 1,500,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4: 1,500,000 - 2,500,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5: &gt; 2,500,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Contribution to food security based on contribution to average daily calorie consumption</td>
<td>1: No contribution</td>
<td>FAOstat Food security indicators – average calories per day from different crops. Data available for 2011 only</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2: 0 - 100 calories per day</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3: 100 - 250 calories per day</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4: 250 – 500 calories per day</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5: &gt; 500 calories per day</td>
<td></td>
</tr>
<tr>
<td>Economic impact</td>
<td>Average value of production of crop over last five years</td>
<td>1: &lt; $100m</td>
<td>FAOstat value of production data ($m constant value). Data available up until 2012</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2: $100m - $500m</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3: $500m - $1bn</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4: $1bn - $2bn</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5: &gt; $2bn</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Average value of exports/ imports over last five years</td>
<td>1: &lt; $50m</td>
<td>FAOstat trade data and UN Comtrade. Data available for 2012 only</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2: $50m - $100m</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3: $100m - $500m</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4: $500m - $1bn</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5: &gt; $1bn</td>
<td></td>
</tr>
<tr>
<td>Competitiveness</td>
<td>Yield per hectare achieve in Myanmar relative to the average yield of the world’s top five producers</td>
<td>1: 0 – 25%</td>
<td>FAOstat comparative yield data; various websites for data on world’s largest producers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2: 25 – 50%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3: 50 – 75%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4: 75 – 100%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5: &gt;100%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Trend in Myanmar’s share of global exports for each sector</td>
<td>1: Significant decline</td>
<td>Review of FAOstat trade data; FAOstat domestic production and supply data (for rice and maize) and UN Comtrade data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2: Marginal decline</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3: Stagnation</td>
<td></td>
</tr>
</tbody>
</table>
| Enabling environment | The level of support provided by government and quality of policies and regulations | 1: Highly unsupportive environment  
2: Unsupportive environment  
3: Broadly neutral environment  
4: Supportive environment  
5: Highly supportive environment | Qualitative judgement based on findings of the desk-based review, as presented in the summary competitive advantages and disadvantages analysis for each sector |
| --- | --- | --- | --- |
| The level of support provided by donors and development partners | 1: Highly unsupportive  
2: Unsupportive  
3: Broadly neutral  
4: Supportive  
5: Highly supportive | Qualitative judgement based on findings of the desk-based review, in particular the review of donor interventions presented in Annex B and the sector level analysis |
| Extent to which sector has any environmental/safety concerns | 1: Significant concerns  
2: High level of concern  
3: Low level of concern  
4: Neutral impact on environment/safety  
5: Positive environmental impact | Qualitative judgement based on research and experience of reviewing sector in other countries i.e. certain crops/agribusiness processes are known to create environmental issues |
| Investment potential | The level of private sector activity in sector | 1: Few actors involved in sector  
2: Some actors involved but only in parts of value chain  
3: Some actors involved across value chain  
4: Significant private activity across parts of value chain  
5: Significant private activity across all value chain | Qualitative judgement based on findings of desk-based review. As presented in the summary overview of the value chain of each sector |
| The amount of recent investment activity in sector | 1: No real evidence of investments found  
2: Limited examples of investment but all donor related  
3: Several investments found but mainly donor related  
4: Evidence of donor and private investment  
5: Significant private and donor investment activity | Qualitative judgement based on findings of desk-based review. We identified investments discussed in G-8 Alliance, and also reviewed industry info in various published reports |
<table>
<thead>
<tr>
<th>Sector</th>
<th>Development</th>
<th>Economic</th>
<th>Competitiveness</th>
<th>Enabling environment</th>
<th>Investment</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Approx. no. of smallholders</td>
<td>Ave. daily calories</td>
<td>Ave. value $m</td>
<td>Ave. value of exports/imports $m</td>
<td>Yield as % of global competitors</td>
<td>Change in export share score</td>
<td>Policy environment score</td>
<td>Support from donors score</td>
<td>Environment / safety concerns</td>
<td>Private activity score</td>
<td>Investment activity score</td>
<td></td>
</tr>
<tr>
<td>Rice</td>
<td>3,903,546</td>
<td>1170</td>
<td>8,422.1</td>
<td>235.1</td>
<td>75%</td>
<td>3</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Beans &amp; Pulses</td>
<td>1.4m - 2.7m</td>
<td>105</td>
<td>2,165.6</td>
<td>1,227.7</td>
<td>114%</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Horticulture</td>
<td>505,600 - 716,000</td>
<td>47</td>
<td>1,102.9</td>
<td>1.07</td>
<td>72%</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Coffee</td>
<td>28,583</td>
<td>n/a</td>
<td>8.3</td>
<td>0.27</td>
<td>58%</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Sesame</td>
<td>1,414,328</td>
<td>112</td>
<td>593.3</td>
<td>54.5</td>
<td>89%</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Dairy (Milk)</td>
<td>1,028,000</td>
<td>50</td>
<td>408.2</td>
<td>0.41</td>
<td>9%</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Poultry</td>
<td>n/a</td>
<td>83</td>
<td>1,475.4</td>
<td>2.22</td>
<td>65%</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Livestock</td>
<td>2,901,296</td>
<td>112</td>
<td>1,481.8</td>
<td>0.57</td>
<td>81%</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
6.2. Priority sectors

We ranked each of the ten sectors in the long-list against the different criteria described in the table above. The final scores for each sector are shown in Table 5.3 below.

The assessment of each sector considered is summarised in Table ES.3. Overall the results of the ranking analysis has the rice and the beans and pulses sectors as the highest scoring sectors.

- **Rice** is critical for food security in Myanmar, and as such is found to receive a significant level of support from government and donors. Although private sector activity can be observed to some extent, our desk-based research suggests that the sector has been detrimentally impacted by the policy uncertainty in the past.

- **Beans and pulses** represent the largest export sector, with export earnings estimated to exceed $1bn. Market prospects are strong on the back of continued demand from India and the potential to develop exports to China. However there appears to be limited scope for adding value, given that most private sector firms appear to be involved in trading.

However, while completing the desk-based research on both rice and beans and pulses one of the important findings was that while both sectors score highly on potential development and economic impact, neither sector looks likely to yield a number of investment-ready opportunities for GAFSP PrSW/IFC. Given that one of the key priorities for this assignment is to find these opportunities the IFC have suggested that we focus on the following areas for phase 2 of the study:

- **Poultry and dairy.** Our desk-based research suggested that both of these sectors are expected to grow significantly in the coming years as a result of increased domestic demand for the products. To support the growth of the domestic industry it is expected that there will be need for considerable investment in animal feed, and so there may be scope for GAFSP PrSW/IFC to help this.

- **Inputs for the agribusiness sector (including mechanization).** We carried out some additional research on the inputs sector and found that there is significant need for investment in inputs to support the increased competitiveness of Myanmar’s agricultural sectors. It was therefore determined that a priority for the phase 2 work should be to review the extent to which GAFSP PrSW/IFC can support increased investment in the sector.

- **Logistics** for the agribusiness sector, with a focus on the aggregation, storage (particularly cold-chain facilities) and distribution of agricultural goods. One of the important findings from our desk-based research across all the sectors that we reviewed is that the paucity of Myanmar’s existing logistics infrastructure for the agribusiness sector is a key constraint for the sector. This is particularly the case in the dairy and poultry sector, given the lack of cold-chain facilities. However, there is some evidence that private companies are entering the sector and as such it is worth following-up to see if there is potential for GAFSP PrSW/IFC to provide additional investment.

6.3. Next steps

For phase 2 of the assignment the team will visit Myanmar to meet with key private and public sector stakeholders.
The objective of this visit will be to update the information available on the key stakeholders present along each stage of the value chain for the priority sectors and to identify a pipeline of investment opportunities for GAFSP PrSW/ IFC.
### Table 6.3: Ranking the long-list of sectors

<table>
<thead>
<tr>
<th>Sector</th>
<th>Development</th>
<th>Economic</th>
<th>Competitiveness</th>
<th>Enabling</th>
<th>Invest</th>
<th>Summary assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice</td>
<td>10</td>
<td>8</td>
<td>7</td>
<td>10</td>
<td>6</td>
<td>Large sector that is critical for food security in Myanmar. Because of its importance receives support from govt. and donors. Some signs of private sector investment activity in the sector, though important to note that sector has been affected by considerable policy uncertainty in the past.</td>
</tr>
<tr>
<td>Beans &amp; pulses</td>
<td>7</td>
<td>10</td>
<td>9</td>
<td>11</td>
<td>3</td>
<td>By far the biggest export sector in Myanmar with over $1bn of export earnings. Expectation of continued demand from India and potential to develop exports to China. From desk-based research, there seems to be limited investment/ scope to add-value with most private sector firms involved in trading.</td>
</tr>
<tr>
<td>Sesame</td>
<td>6</td>
<td>5</td>
<td>7</td>
<td>9</td>
<td>5</td>
<td>Important food security crop with the potential to increase exports if improvements in quality can be achieved. Not clear from research that there are many potential partners/ has been much recent investment activity.</td>
</tr>
<tr>
<td>Poultry</td>
<td>7</td>
<td>5</td>
<td>6</td>
<td>8</td>
<td>5</td>
<td>There is strong demand for poultry in the domestic market, though opportunities to develop an export market appear to be limited. According to the research, there are only two commercial scale organisations operating in the sector.</td>
</tr>
<tr>
<td>Livestock</td>
<td>8</td>
<td>5</td>
<td>7</td>
<td>9</td>
<td>2</td>
<td>The sector is also experiencing high demand. Beyond CP Livestock it is unclear that there are many other potential private sector companies of the size and track-record to make them viable investment opportunities.</td>
</tr>
<tr>
<td>Horticulture</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>8</td>
<td>5</td>
<td>The sector is very small and there is no real export market at present. Seemingly limited scope for any large-scale investment at present. The few investments identified in the sector are around $500,000.</td>
</tr>
<tr>
<td>Coffee</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>13</td>
<td>5</td>
<td>Coffee is a small but growing sector. There have been reports of investment by foreign companies. Ultimately the size of the sector may limit opportunities.</td>
</tr>
<tr>
<td>Dairy (milk)</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>8</td>
<td>5</td>
<td>Sector is reportedly not competitive with imports. There are few commercial-scale companies operating in the sector.</td>
</tr>
</tbody>
</table>
# ANNEX A: BROAD CATEGORIES OF MFIs

<table>
<thead>
<tr>
<th>Category</th>
<th>Individual institution</th>
<th>Interest rate (per month)</th>
<th>No of branches/outlets</th>
<th>No of borrowers</th>
<th>Outstanding loan portfolio (kyats bn)</th>
<th>Other information</th>
</tr>
</thead>
<tbody>
<tr>
<td>State owned bank</td>
<td>MADB</td>
<td>1.3%</td>
<td>205</td>
<td>1,420,000</td>
<td>84</td>
<td>Borrowers are mainly in the rural areas and agriculture sector, accounting for about half the estimated micro-clients.</td>
</tr>
<tr>
<td></td>
<td>Myanmar Small Loan Enterprise (MSLE)</td>
<td>3%</td>
<td>143</td>
<td>208,778</td>
<td>31.34</td>
<td>MSE the microfinance supervisor was formally known as Myanmar Small Loan Enterprise (MSLE), which issued 208,778 small-scale, typically short-term, loans to microenterprises by March 2011, estimated at $37.6m. These loans were issued mainly against gold collateral, with high interest rates charged (3% per month).</td>
</tr>
<tr>
<td>Private bank</td>
<td>Myanmar Livestock and Fisheries</td>
<td></td>
<td>53</td>
<td>N/A</td>
<td>N/A</td>
<td>55% of its loans are reportedly to agriculture; but further information is limited.</td>
</tr>
<tr>
<td>Cooperatives</td>
<td>Central Cooperative Society (CSS) MFIs</td>
<td>2.5%</td>
<td>46</td>
<td>32,851</td>
<td>1.13</td>
<td>CSS’ MFIs function as village banks, covering seven states and regions, providing loans of 45,000-120,000 kyats, with a compulsory saving of 2.5% of the loan size. CSS reports 98-99% repayment rates, given that loans typically have a 60-day tenure with daily collection of repayments</td>
</tr>
<tr>
<td></td>
<td>Financial Cooperatives - Union of</td>
<td>2%</td>
<td>1625</td>
<td>476,632</td>
<td>16.5</td>
<td>Union doesn’t have a microfinance license yet; it lends instead to primary societies at a flat 2% rate per month, in addition to having launched its own lending to individuals in June 2012.</td>
</tr>
<tr>
<td></td>
<td>Savings and Credit Federation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specialised Agricultural</td>
<td>Rice Specialization Companies</td>
<td>2%</td>
<td>38</td>
<td>57,502</td>
<td>20.09</td>
<td>Companies provide value chain financing for rice production through seasonal loans (with seeds, inputs, fertilisers provided) with around $45-$60m in overall loans extended each harvest season, supporting 200,000 farmers.</td>
</tr>
<tr>
<td>Companies</td>
<td>Other Specialized Companies</td>
<td>2%</td>
<td>22</td>
<td>140,000</td>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>

Source: IFC (2013)
ANNEX B: CONSTRAINTS TO FINANCING AGRICULTURE

Due to the ban until recently, MFIs are still in a nascent stage of development, with limited scope and scale in terms of number of rural farmers and areas covered. Further, there are still a number of constraints to the growth of MFIs such as:

- **Fragmented supervision** across government agencies with limited capacity.
- **Regulatory framework**, such as in terms of methodology and limited differentiation between deposit and non-deposit MFIs; low capital requirements for deposit-taking institutions; and the prescribed interest rate ceilings.
- **Challenges underlying funding**, given that the current legislation doesn’t allow MFIs to seek out refinancing from local and foreign financial institutions.
- **Bottlenecks relating to telecommunications and transportation.**

The commercial banking sector’s outreach to the rural population also faces a number of challenges including:

- **Interest rate caps.** The minimum deposit rate has been lowered from 10% to 8%, and maximum loan rate from 15% to 13%. Given the narrower spread, banks have less incentive to target the lower end of market segment due to high operating costs.
- **Regulatory restrictions.** Deposits are limited to 25 times paid-up capital, while banks are required to maintain a liquidity rate of 20%. The laws around collateralized lending are restrictive, with a 50% loan-to-value ratio.
- **Unfavourable enabling environment.** Uncertain prioritisation of creditors and highly unpredictable enforcement of debt actions contribute to costly procedures for creating and enforcing secured transaction. Other impeding factors include limited scope to use technology to increase rural access.

Given these various challenges, GoM is planning several initiatives to import farm input credit:

- **Reforms to the MADB.** The draft amendment to the MADB Law (to be presented to Parliament through MOAi) proposes increasing MADB capital and reserves to $11.4m and increasing loans extended to each farmer producing rice and sugarcane from $226 to $283 per ha.
- **Implementation of relaxed bank lending regulation** (while waiting for results of financial sector master plan). GoM is considering allowing commercial banks to lend for terms exceeding one year while enabling mortgage finance to get started. GoM will also permit and encourage use of moveable assets (including exportable crops and gold) as collateral for lending, (although this will mainly benefit large farmers). The list of eligible collateral has also expanded to include key agricultural export goods besides real estate and fixed deposit accounts.
- **Syndicated loan system**, being implemented by GoM will have a preference rate of 11% p.a., 2% less than the regular lending rate, provided for agribusinesses.
• **Accelerating land registration to enable farmers to use land as collateral.** MOAI conducted a land registration survey (slated to have ended in March 2013) with the objective of making long-term loans available for farmers equivalent to 30% of their land value (although MOAI has indicated that this would exclude farmers owing debts to MADB or Specialised Agricultural Development Companies).

• **Opening up of banking sector.** GoM has committed to permit foreign banks to establish wholly owned operations once domestic banks have been prepared for foreign competition.

• **Deposit insurance scheme.** 17 private banks have already participated in the scheme introduced by Myanmar Insurance Corporation to address lack of insurance and protect small depositors from losing their deposits in the event of bank failure. The corporation indicated in June 2013 that it would also provide insurance to farmers, although the types of insurance and start date of the scheme were yet to be decided. In addition, the government has recently permitted operations by private insurance companies (with private players coming in since mid-2013).
## ANNEX C: DONOR INTERVENTIONS

<table>
<thead>
<tr>
<th>On-going/ recent programmes</th>
<th>Size</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IFAD</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fostering Agricultural Revitalization in Myanmar (FARM): 2014 - 2020</td>
<td>Total cost: $27.8m; total IFAD financing: $19.5m (IFAD loan: $18.7m; IFAD grant: $0.8m)</td>
<td>Aims to introduce regional and global best practices in sustainable and scalable smallholder agriculture and rural development across Myanmar’s CDZ region, and support land consolidation and development, productive infrastructure, agricultural and business services, the flow of knowledge and capacity building to promote an inclusive development model. There are two key components: (i) agricultural infrastructure development, contributing to on-going expansion of irrigated areas (under the aegis of MOIA) and to smallholders’ empowerment (particularly O&amp;M of irrigation schemes) and (ii) agricultural and business services, focused on investing in knowledge and financing sustainable growth of rural micro-businesses and SMEs. Project covers command areas of six irrigation schemes in Nay Pyi Taw Union Territory comprising more than 35k Ha within five townships, in addition to 10k Ha of rainfed lowlands and uplands located around these townships. It directly benefits 37.6k households.</td>
</tr>
</tbody>
</table>

<p>| <strong>ADB</strong>                     |      |             |
| Interim Re-engagement Strategy for Myanmar: 2012-14 | Objective is to reengage in Myanmar and develop a comprehensive country partnership and program, with a focus on: (i) building human and institutional capacity in ADB’s areas of focus; (ii) promoting an enabling economic environment; and (iii) creating access and connectivity in rural livelihoods and infrastructure development. With regard to agriculture, there is recognised need to support the following areas in particular: (i) policy and institutional reforms; (ii) rural infrastructure to increase agricultural productivity (irrigation, flood control, drainage and salinity control); (iii) market infrastructure for inputs and outputs, particularly rural transport infrastructure to reduce transaction costs (rural roads and trails, post-harvest storage and processing facilities); and (iv) rural finance. Overall ADB has approved 18 projects to support Myanmar through provision of Technical Assistance. |</p>
<table>
<thead>
<tr>
<th>Project Description</th>
<th>Budget</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrigation Command Area Development: 2013 -</td>
<td>$1,200,000</td>
<td>Project preparatory assistance will prepare an investment project for irrigated agriculture, including gathering information and other baseline data, survey and feasibility study of the subprojects, and address the required due diligence. During project design, stakeholder consultations will be conducted, while farmers will participate in rehabilitation and construction of tertiary and on-farm canals, and receive training for irrigation management and higher value agriculture. During project implementation, the main stakeholders (farmers in project areas and government officials) will be involved in subproject planning, designing irrigation system, construction works and O&amp;M.</td>
</tr>
<tr>
<td>Capacity Development and Institutional Support: 2013 –</td>
<td>$2,090,000</td>
<td>Aims to strengthen government capacity to develop and implement policies through a combination of policy advice, learning programs, workshops and seminars to share knowledge and discuss economic development and policy issues. Efforts will be complemented by preparation of capacity-building plans based on training needs assessments, in-country training programs based on demand, and out-of-country programs to learn lessons and best practices from neighbour countries.</td>
</tr>
<tr>
<td>Irrigation Command Area Development Project: approval is slated for 2016</td>
<td>$75,000,000</td>
<td>Proposed project aims to increase agricultural productivity and incomes through rehabilitation and modernisation of irrigation infrastructure in the CDZ region, in addition to strengthening institutional capacities for improved irrigation management from the national level down to irrigation water user groups (WUGs) at the farm level.</td>
</tr>
</tbody>
</table>

**World Bank**

<table>
<thead>
<tr>
<th>Project Description</th>
<th>Total cost:</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ayeyarwady Integrated River Basin Management (AIRBM) Project: Dec 2014 – Sep 2020</td>
<td>$100m (covered by $100m credit from IDA)</td>
<td>Aims to strengthen integrated, climate resilient management and development of the Ayeyarwady River Basin and national water resources, such as by developing water resources management institutions and enabling informed decisions about future investments in developing the river.</td>
</tr>
<tr>
<td>Myanmar National Community Driven Development Project: Nov 12 – Jan 2019</td>
<td>Project cost: $86.30m (commitment amount: $80m)</td>
<td>Development objective is to enable poor rural communities to benefit from improved access to and use of basic infrastructure and services through a people-centered approach and to enhance the government’s capacity to respond promptly and effectively to an eligible crisis or emergency.</td>
</tr>
</tbody>
</table>
### FAO

| Country Programming Framework 2012-16 | Total cost: $119.8m: Overall framework comprises 39 projects/activities pertaining to the crop subsector (14 projects), livestock (3 projects), fisheries (7 projects), forestry (9 projects) and cross-subsectors (6 projects). The projects support the seven priority outcomes identified for FAO assistance in Myanmar: (i) increased production to enhance food security (10 projects); (ii) improved food safety and quality (2 projects); (iii) sustainable management of natural resources and the environment (6 projects); (iv) land use and land management (3 projects); (v) human resource development and institutional capacity building (5 projects); (vi) rural livelihoods improvement (5 projects); and (vii) preparedness for and mitigation of disasters and climate change (8 projects). |

### LIFT

| A total 93 active and completed projects have been funded to date. | Total budget of approx. $163m; donors have committed $250m to date with additional commitments expected this year. 91 active and completed grants totalling $142m were administered by mid-2014. | Key objective is to promote agricultural production in the most vulnerable regions in Myanmar and help the country achieve MDG1 (eradication of extreme hunger and poverty) by increasing availability of and access to food. Activities are expected to result in: (i) improved production and postharvest technologies; (ii) support to off-farm livelihood activities; (iii) training in livelihood skills for employment; (iv) support to sustainable natural resource management and environmental rehabilitation; (v) enhanced social protection measures; and (vi) capacity-building activities for civil society.  

The Fund is active in 170 (out of 330) townships across the country, operating particularly in rural areas of Ayeyarwady Delta, the Dry Zone and Chin, Kachin, Shan, Rakhine States. Thus far, it has supported 2.5m people (576,000 households, 30% of which have received cash-for-work, while 60,000 reported increased incomes). Key results include: 249,000 people participated in capacity development training; 183,000 households accessed credit for farm and non-farming purposes; 21,000 people trained in environmental protection, conservation or rehabilitation; and 290,000 households increased their food security by more than one month. |
<table>
<thead>
<tr>
<th>Project Description</th>
<th>Total project cost:</th>
<th>GEF Grant:</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Sustainable Cropland and Forest Management in Priority Agro-ecosystems: 2013 -</td>
<td>$19.8m</td>
<td>$6.3m</td>
<td>The objective is to build the capacity of farming and forestry stakeholders to mitigate climate change and improve land condition by facilitating the adoption of climate smart agriculture and sustainable forest management policies and practices.</td>
</tr>
<tr>
<td>FishAdapt: Strengthening Adaptive Capacity and Resilience of Fisheries and Aquaculture-dependent Livelihoods: 2014 –</td>
<td>$18.5m</td>
<td>$6.15m</td>
<td>The objective is to enable inland and coastal fishery and aquaculture stakeholders to adapt to climate change by understanding and reducing vulnerabilities, piloting new practices and technologies, and sharing information.</td>
</tr>
<tr>
<td>EU Bilateral cooperation program: 2014-20</td>
<td>Overall funding: €688m (up to €241m for rural development, agriculture, food &amp; nutrition security)</td>
<td></td>
<td>Provides support to address challenges in the area of rural development, agriculture and food and nutrition security, and high levels of under-nutrition, through efforts directed at climate smart and nutrition sensitive agricultural production and value chains, increased resilience to natural disasters, improved natural resource management, better infrastructure and strengthened capacity.</td>
</tr>
<tr>
<td>Food Security Thematic Programme (FSTP)</td>
<td>€4.9m</td>
<td></td>
<td>Comprises four on-going projects, focused on alternative livelihoods to poppy farming; crop productivity; diversification; small livestock, producers’ organisations; nutrition education and water infrastructure.</td>
</tr>
<tr>
<td>Supporting sustainable fisheries in Indawgyi Lake: Apr ‘11 - Apr ‘14</td>
<td>€75,000.00; EU contracted</td>
<td></td>
<td>Aims to ensure sustainable use of the natural resources of Indawgyi Lake in Kachin State, specifically empower local communities to design and implement a network of fishing-free zones across Indawgyi Lake to ensure the recovery of fish stocks and a sustainable future harvest.</td>
</tr>
<tr>
<td>Australia</td>
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<td>--------------------------------------------------------------------------</td>
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<tr>
<td><strong>ACIAR Multidisciplinary Research Program for Burma: 2011-16</strong></td>
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<td></td>
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<tr>
<td>$12m</td>
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<tr>
<td>Aims to increase food security and improve farmers’ livelihoods by focusing on strengthening Burma’s agricultural institutions, improving technical expertise in agriculture, and researching ways to improve quality seeds and food production techniques that can be relayed to farmers and rural households. ACIAR is undertaking important research on rice, legumes, livestock and fisheries, which is supported by a socio-economic and agricultural skilling program to enable rural households to apply research findings to increase their incomes and food security. The Program also helps strengthen agricultural policies and capacity in agricultural institutions by working closely with the Myanmar Government and universities.</td>
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<table>
<thead>
<tr>
<th>Italy</th>
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<tbody>
<tr>
<td><strong>Environmentally Sustainable Food Security Programme: 2010-13</strong></td>
</tr>
<tr>
<td>Total: $5.3m</td>
</tr>
<tr>
<td>The Programme encompasses three projects:</td>
</tr>
<tr>
<td>- Support to immediate rehabilitation of farming, coastal fisheries &amp; aquaculture livelihoods in cyclone Nargis-affected areas of Myanmar (2010-13, $2.8m), aimed at sustainable improvements in household production, nutritional status and income-generating activities among households and communities comprising landless, marginal and small-scale farmers and fishers in the cyclone-affected townships of Bogale, Labutta and Pyapon. Project directly benefits 27,960 farmers and 2,110 fishers.</td>
</tr>
<tr>
<td>- <strong>Sustainable Small Scale Fisheries and Aquaculture Livelihoods in Coastal Mangrove Ecosystems (2010-13, $1.25m)</strong>, aimed at strengthening capacity of participating communities and supporting institutions in target areas to jointly plan and co-manage implementation of sustainable and mangrove-friendly small-scale aquaculture and fisheries. The total number of households in the project area is about 2,405 (28%, full-time fishers, 50%, casual labourers engaged in fishing and mangrove exploitation on a part-time basis, and 19% farmers).</td>
</tr>
<tr>
<td>- <strong>Support to Special Rice Production (2010-12; $1.25m)</strong>. Targets greater food, nutrition and livelihood security. Key outcomes include: sustained crop intensification in the Ayeyarwady Delta and Central Dry Zone of Myanmar; rehabilitation and sustained operation of Water Harvesting and Small-scale Irrigation Schemes in the Central Dry Zone of Myanmar; Capacity Building, Institutional Strengthening</td>
</tr>
</tbody>
</table>
and Sustainability of Community-Based Organizations (CBOs); and (iv) effective partnerships among stakeholder organizations. The activities have benefitted 6,789 marginal and small-scale farmers, with around 68,000 indirect beneficiaries estimated.

<table>
<thead>
<tr>
<th>JICA</th>
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<tbody>
<tr>
<td><strong>Project for the Eradication of Opium Poppy Cultivation and Poverty Reduction in Kokang Special Region No.1 (2005-2011)</strong></td>
<td><strong>990m yen</strong></td>
</tr>
<tr>
<td>Aims to reduce poverty that developed immediately after eradication of opium poppy cultivation. Project has distributed materials required for agricultural production (seeds and fertilizer); provided mosquito netting to prevent the spread of malaria; in addition to paving roads and building water supply facilities built to provide needed infrastructure. Key agricultural activities centred on: (i) farming system improvements: food crops, cash crops, organic fertilizer, pest control and soil conservation; (ii) agriculture Training: center training, mobile training, farming demonstrations and model farmer training; and (iii) livelihood improvements: living environment improvement as well as income creation through livestock revolving.</td>
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<table>
<thead>
<tr>
<th>KOICA</th>
<th></th>
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<tbody>
<tr>
<td><strong>Agricultural Extension Human Resource Development Project: 2007-11</strong></td>
<td><strong>160m yen</strong></td>
</tr>
<tr>
<td>In response to regional needs for farming expertise, Central Agriculture Research and Training Center provided training to new specialists. Activities are broadly divided into three categories: design and revision of methods to spread farming techniques according to farmers’ needs; creation of lecture materials and training aids for teaching farming techniques, and selection and training of model specialists for training.</td>
<td></td>
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</table>

Official statistics indicate that South Korea has invested $3.02 in 79 projects Myanmar as of July 2013. While detailed information on project costs and the program components are not available, the following projects are broadly identified as focusing on agriculture and rural development:

- **Land Reform Project for Transformation into Mechanized Farming: 2013-15**; in addition, KOICA will help Myanmar establish a training school for agricultural mechanization at Yezin in Zeyathiri township, Nay Pyi Taw Council Area, while farmland in other Zabuthiri townships in the same area will also be upgraded. The project aims to boost agricultural production and encourage transformation in terms of human resources development and increasing farmers’ income through agricultural mechanisation.
- **The Project for the Post-harvest Technology Assistance: 2011-14**
- Improving Good Agricultural Practice on Rice, Vegetable and Fruit Crops and Increased Income through Integrated Agricultural Farming In Pyinmana, Nay Pyi Taw (2011-2013)
- Pilot project of an irrigation technology centre in Patheingyi, Mandalay region implemented by World Friends KOICA-Volunteer (WFK-Volunteer) of KOICA and completed in July 2013. This included an IT training center and supporting essential lab equipment.

<table>
<thead>
<tr>
<th>OPEC Fund for International Development</th>
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<tbody>
<tr>
<td><strong>Oilcrops Development Project</strong></td>
</tr>
<tr>
<td>The project will focus on developing oilseed crops including sesame, groundnut, sunflower, soybean and oil palm among farmers in 36 townships. Funding will upgrade seed laboratories and cleaning facilities, create a seed capital fund, build new solvent extraction plants, construct new palm oil mills and raise production capacity of seed refineries in Yangon</td>
</tr>
</tbody>
</table>

| Thonze and Kabaung Irrigation Project                         | $20m |
| Initiated in 2007 to address irregular rainfall for irrigation dependent agriculture. The ongoing project will rehabilitate Thonze and Kabaung irrigation schemes to fix poor drainage systems and to construct an extensive canal system. The project, once completed, will serve 38,777 ha, allowing agricultural output to double. Over 80,000 people are expected to benefit from higher crop yields. |

<table>
<thead>
<tr>
<th>NZAID</th>
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</thead>
<tbody>
<tr>
<td><strong>Dairy Development Project</strong></td>
</tr>
<tr>
<td>A five-year dairy development project in Myanmar to improve the profitability of the dairy sector increase livelihoods for farms, and safe food for consumers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>USAID</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Food Security/Agriculture Diagnostic</strong></td>
</tr>
<tr>
<td>Focussing on food security and agricultural development, this program is aligned with the principles of Feed the Future, the U.S. Government’s global hunger and food security initiative. USAID partnered with a team from Michigan State University and Myanmar Development Resource Institute to assess the challenges and opportunities for reducing hunger and poverty, creating reports “Agribusiness Models for Inclusive Growth in Myanmar: Diagnosis and Ways Forward” and “A Strategic Agricultural Sector and Food Security Diagnostic for Myanmar”</td>
</tr>
<tr>
<td>Lower Mekong Initiative</td>
</tr>
<tr>
<td>------------------------</td>
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<tr>
<td>The Netherlands Enterprise Agency (RVO)</td>
</tr>
</tbody>
</table>
### ANNEX D: ACTIVITIES OF LARGEST FIRMS IN THE POULTRY SECTOR

<table>
<thead>
<tr>
<th>Firm</th>
<th>Activities</th>
<th>Market share</th>
</tr>
</thead>
</table>
| **Myanmar CP** | • **Compound feed manufacturing:** 4 feed mills at Yangon, Mandalay, Kyaut Me and Taung Gyi.  
• **Breeder farms:** Bago, Ye' Mon, Thar Yar Gone, Inta Gaw and Sint Kine.  
• **Hatcheries:** Yangon and Mandalay.  
• **1 Slaughterhouse:** Yangon (capacity: 1,500/h) | 40-45%        |
| **Japfa Maykha** | • **Compound feed manufacturing:** 2 poultry feed mills: (i) Yangon (2014) – Capacity 20,000 MT/month; (ii) Mandalay (1997) – Capacity 5,00 MT/month; 3rd feed mill to be operational in 2016.  
• **Broiler & Layer breeding:** Hmawbi Township, (Yangon area). Breed: Lohmann Indian River (LIR).  
• **Hatchery & DOC production.**  
• **Commercial broiler farming:** Yangon, Mawlamyine, Pyay, Pakokku, Nay Pyi Taw, Meiktila and Mandalay. | 20-25%        |
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GLOBAL AGRICULTURE AND FOOD SECURITY PROGRAM (GAFSP) PRIVATE SECTOR WINDOW

SECTION 2: AGROBUSINESS COUNTRY DIAGNOSTIC – MYANMAR PHASE 2

March 2016

Submitted by:

Cambridge Economic Policy Associates Ltd
SUMMARY FINDINGS

Some Information in this section has been omitted for confidentiality reasons

This report presents the findings of phase 2 of the assignment. The focus of this phase of work has been to complete a country visit to Myanmar to meet with stakeholders to identify the nature of any specific potential investment opportunities for consideration.

Findings on investment opportunities for GAFSP PrSW/IFC in Myanmar

Important context for our findings on investment opportunities is that GAFSP PrSW/IFC is looking to support projects of a minimum size of $5m and ideally bigger than US$10m. The investment criteria has an important impact on the number of projects that can realistically be considered for investment in the Myanmar at this stage.

Most sectors/ agribusinesses in Myanmar are too early-stage and few local players/ international are big enough to carry out investments of the required size. Furthermore, IFC are already active in agreeing mandates with a number of the relatively few major agribusinesses that could support large investment in the target sectors. An additional factor is that a number of the other large firms either have access to their own sources of finance or have strong links with the previous government regime making them not suitable for investment.

Despite this we identified a few interesting, albeit very early-stage, opportunities. These opportunities are at an early stage of development, in both cases they are with large companies that have the capacity to finance their own activities. Their main interest in working with GAFSP PrSW/IFC is to receive early stage project-development support to help develop the projects into viable opportunities. We recommend an immediate follow up with both organisations by the relevant IFC team to determine whether GAFSP’s private sector advisory funds could be used to support feasibility/ early stage work in these instances.

In addition, we consulted with Infra Capital Myanmar (ICM), a project development company operating on behalf of InfraCo Asia in Myanmar. The immediate action for IFC is to meet with the ICM team to understand more about the project.

The remainder of this summary outlines our main findings.

Summary of our findings

In phase 1 of this study we carried out desk-based analysis to select priority sectors for review in phase 2. Following discussions with the IFC we identified:

- Agri-inputs
- Poultry
- Dairy

As the priority sectors. A summary of findings for each sector is given below. We covered the opportunities in the logistics sector when reviewing the value-chains of the other priority sectors.
S.1 Findings on the agri-inputs value chain

In the agri-inputs sector our main findings focused on the opportunities to support the development of projects with CSDG and ICM. We also consulted with June Industry that wants support to explore its concept to develop its production of bio-fertiliser and to develop the demand for bio-fertiliser in Myanmar.
S.2 Findings on the poultry value chain

Figure S.1: Overview of the poultry value chain

Summary of findings on the poultry value chain

- As GDP per capita continues to grow from its current level of US$1,200 alongside the increasing trend towards urbanization it is expected that demand for poultry will increase rapidly in the future, with growth rates expected to be in the 15% to 20% per annum range.

- However, poultry production in Myanmar is not efficient and production costs not competitive with international standards. Domestic producers are currently protected by the import restrictions on frozen chickens.

- There is some uncertainty about whether the import restrictions will be removed. While there is currently a preference amongst local consumers for fresh chickens, as demand grows/urbanization continues domestic producers will need to reduce costs of production of chicken otherwise there is a risk that the country will be reliant on imports.

- The main constraint identified in the sector is the lack of access to affordable and high quality feed, which accounts for around 70% of costs. Interventions designed to increase the quality of feed inputs, the logistical challenge faced in transporting them from the main producing area in Shan State to the producers in Yangon and the high import costs faced due to port inefficiencies could help to support the development of the sector.

- The Dutch (together with a number of Dutch companies) are currently funding a range of activities across the poultry value chain and could provide a natural partner for interventions designed to support the improved competitiveness of domestic producers.
Commercial investment opportunities in the poultry value chain

We understand that IFC is in the process of agreeing a project to invest in a feed mill. Beyond that, given the relatively concentrated nature of the sector the number of potential investment partners is limited, though it is worth continuing to monitor the progress of the relatively new entrants Sunjin and New Hope.
S.3 Findings on the dairy value chain

Figure S.2: Overview of the dairy value chain

Summary of findings on the dairy value chain

Our view is that the dairy sector is too early stage to provide investable opportunities for GAFSP PrSW/IFC in the short to medium-term. Although the sector is expected to double in size over the next eight years, it is growing from a very low base and is unlikely to support large commercial investment at this stage. Opportunities could open up in the longer-term. To demonstrate this on the next page, we profile the current investment needs of one of the biggest dairy firms in Myanmar.

One of the fundamental issues faced by the dairy sector is a lack of demand given the current purchasing power of consumers and because consumers have not really developed much of a preference for dairy products. Current estimates suggest that consumption of dairy products is around 10kg per capita (against international averages of around 100kg). To increase demand there is need for marketing/awareness campaigns to build local preferences for dairy products.

The Dutch are carrying out a range of development activities in the dairy sector, so could be a partner for GAFSP PrSW/IFC to help identify future investment opportunities.

The study also identified the need for policy intervention to consider how additional land can be opened up to increase the production of quality fodder for cattle. Government intervention is also needed to reduce the regulatory burdens in place that make it difficult for dairy producers to import semen straws to enable them to improve the genetic variety of their cattle.
Commercial investment opportunities in the dairy value chain

As summarised above, our view is that the dairy sector is currently too small/ early stage to support investments of the size being targeted by GAFSP PrSW/IFC.

S.4 Additional sectors covered during the field visit

In addition to the priority sectors review we met with stakeholders in the finance, horticulture and sesame, beans and pulses sector during our visit. We summarise our findings from those sectors in the table below.

<table>
<thead>
<tr>
<th>Horticulture</th>
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<tbody>
<tr>
<td>- The sector is very small, but there is some optimism that there is a good opportunity for future growth because of optimal growing conditions in areas such as Shan State. There are existing exports of fruits such as melon, mango, pomelo and avocado are currently exported for below-market prices mainly to China, a country with low quality requirements. Further some of the companies consulted, such as Shan Maw Maye are producing dried fruits such as mango for export to Japan and Thailand.</td>
</tr>
<tr>
<td>- Our overall findings from the country visit is that Myanmar’s horticultural is not competitive at the moment, and needs long-term work across the value chain before it is likely to yield a pipeline of GAFSP PrSW/IFC sized investment opportunities. Horticulture growers remain fragmented and disconnected from market centres due to poor infrastructure, low quality inputs, lack of farmer skill and knowledge and poor access to finance.</td>
</tr>
<tr>
<td>- Following a roundtable meeting organised by the Ministry of Agriculture and Irrigation (MOAI) and the Dutch Embassy a task force has been established to support the growth of the sector. One of the main current areas of focus is the implementation of a plan to train one million vegetable growers in 4 years’ time.</td>
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<table>
<thead>
<tr>
<th>Sesame, beans and pulses</th>
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<tbody>
<tr>
<td>- Our consultations in this sector confirmed the findings of the desk-based review in that Myanmar is currently the world’s largest sesame exporter, but only exports unprocessed seeds which attract prices of around US$1,800 per MT compared to the US$4,000 per MT that high-quality sesame oil can attract. Most of the agribusinesses involved in the sector are traders/ exporters, there is no processing infrastructure/ technical know-how to establish in Myanmar at present so sector is reliant on an, as yet unidentified new entrant.</td>
</tr>
<tr>
<td>- Myanmar also exports pulses, mainly to India and some to EU markets. There was no evidence that there are commercial investment opportunities, particularly because there is seemingly no investment/ activity in the processing part of the value chain, the main focus is on trading.</td>
</tr>
<tr>
<td>- In terms of sector development efforts are focused on supporting producers to improve the quality of production to ensure that local producers comply with the new EU regulations on food safety related to the sector, and are of the required quality for sprouting. Again the Dutch are supporting a small project alongside the MOAI EastWest Seed (a Dutch importer) and Wageningen University to develop improved seed varieties.</td>
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<thead>
<tr>
<th>Financial sector</th>
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<tbody>
<tr>
<td>- IFC has provided support through its engagement with ACLEDA bank, which facilitated the establishment of the ACELDA Micro Finance Institution (MFI) in Myanmar. IFC has also given loan support to Yoma bank and provided a trade finance credit line for the Myanmar Oriental Bank.</td>
</tr>
</tbody>
</table>
• Giving existing activities, the scope for additional IFC support in the sector seems limited in the short-term. One of the constraints is that it is difficult to find additional partners due to the nature of the shareholders of various banks. For example, commercial banks such as Ayeyarwaddy (AYA) Bank and KBZ are not accessible to the IFC even though they would theoretically benefit from IFC financing and are of appropriate size and scope.

• An additional issue is that while IFC can provide loans in local currency, this creates complicated hedging and foreign currency costs. However, one area that GAFSP might be able to provide additional support to open up new investment is helping to supporting more favourable hedging arrangements.
1. INTRODUCTION

Some Information in this section has been omitted for confidentiality reasons

Cambridge Economic Policy Associates (CEPA) was appointed by the International Finance Corporation (IFC) to carry out analysis of the agribusiness sector in Myanmar to support the identification of possible investment opportunities for GAFSP PrSW/IFC.

1.1. Background to the assignment

GAFSP PrSW/IFC is a multilateral mechanism that is managed by the IFC. It is designed to assist in the implementation of the pledges made by the G20. GAFSP PrSW/IFC provides long and short term loans, credit guarantees, equity and advisory services with the aim of improving agricultural development and food security in targeted developing countries. It targets agribusiness investments across the value-chain that are commercially viable but have temporary higher costs/ risks that would otherwise prevent them from attracting/ affording finance on more commercial terms.

GAFSP PrSW/IFC is looking to support projects of a minimum size of US$5m in developing countries. A project size of US$5m is at the bottom end of IFC’s financing range, so any such project would need to have a strong developmental case. In practice the target investment size is US$10m and preferably higher. IFC can finance 15 - 35% of the company’s capitalisation (depending on the company’s credit rating and size of financing) this can increase to 50% for expansion projects. There is no limit to the proportion of the project that IFC can finance as long as the capitalisation requirements explained above are met.

For the purposes of the Myanmar study we have focused on investments that meet these criteria, but have also included smaller projects where there may be scope for additional investment in the medium-term given the expectation that give the size/ level of development of the agricultural sector in Myanmar the number of investment opportunities of the required size is likely to be quite limited.

1.2. Objectives of the report and approach

This report presents the results of phase 2 of the assignment where we identify the key players operating in the priority sectors identified during the phase 1 study:

- Agricultural inputs (Section 2 of this report).
- Poultry sector, including animal feed (Section 3).
- Dairy (Section 4).
- Logistics (which we covered when looking at each of the other priority sectors).

In each section we then identify the investment opportunities that have the potential to be supported by GAFSP PrSW/IFC in each sector and suggest options for follow up.
2. **Agri-inputs value chain**

*Some information in this section has been omitted for confidentiality reasons*

This section details our findings on the agri-inputs value chain and then presents the investment opportunities found for consideration by GAFSP PrSW/IFC.

2.1. **Agri-inputs value chain**

The IFC commissioned a comprehensive study of the agri-inputs value chain in 2015 that gives a full overview of the existing players engaged in the supply chain and highlights the main issues affecting the sub-sector. Rather than repeating the content of that report, below we highlight any additional information that we found during the field visit:9

**Lack of soil testing equipment/ knowledge**

Soil testing has not been carried out/ updated in Myanmar across all States, as such farmers have continued to rely mainly on the use of urea and Nitrogen Phosphorus and Potassium (NPK), which in all probability is not appropriate for the existing agro-ecological conditions. This is reducing farmers’ yields and also potentially damaging the quality of soils in Myanmar.

Investment in soil testing equipment and dissemination of information on the appropriate fertilisers for the soil characteristics of Myanmar’s agro-ecological zones is particularly needed to support the growth of niche sectors such as horticulture. The horticulture sector requires the use of a wide range of different fertilisers to fit the needs of the various crops and soil characteristics. If horticultural farmers have to rely on just NPK and Urea it is unlikely that they will be able to compete with other horticultural producing countries.

**Working capital finance**

Another issue that was highlighted during the visit is that the fertiliser importers currently have no access to formal sources of working capital requirements. It was reported to us that the current banking regulations do not permit the provision of credit for working capital in the agricultural sector. This may not be a significant issue for some of the larger cash-rich agri-input importers, but does add to the costs faced by smaller importers. For instance, one company reported to us that it has to make use of informal loans from its business partners to fund its working capital requirements. They have to pay between 2 – 3% interest per month, which is passed on to the price paid by farmers.

**Dutch activities in the inputs sector**

The Netherlands Ministry of Economic Affairs is supporting a range of activities in the agri-inputs sector as part of the Myanmar-Netherlands Agri Programme (MNAP):

- Based on the findings of a recent report the Dutch are working together with the MOAI to improve Myanmar’s regulatory framework to bring the regulatory system and capacity for phytosanitary services and pesticide regulation more in line with international standards to

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help improve food safety and protect current and future export markets. Some of the key areas that these efforts will target include developing new regulations around pesticide registration and the capacity of government officials to enforce them to help stem the tide of illegal pesticide imports.

- The programme has begun a project to train 1,000 local farmers in all aspects of the potato value chain. Farmers in South Shan will receive training in multiplying high quality seed potatoes imported from the Netherlands, including farm management techniques. They have also established a €2m PPP project to begin testing and selecting potato varieties under different ecological conditions across Myanmar.

2.2. Investment opportunities in the agri-inputs value chain for GAFSP PrSW/IFC

Through our consultations in Myanmar we identified that IFC are in discussions with a local fertiliser company to support their investments in the fertiliser value chain. In addition to this opportunity we found some opportunities for consideration by GAFSP PrSW/IFC.

2.2.1. Additional meetings on developments in the agri-inputs sector

In addition to the investment opportunities identified above we met with additional companies that for different reasons did not provide sufficient information on investment opportunities that can be considered by GAFSP PrSW/IFC at this stage:

- The Myanmar Agribusiness Public Corporation (MAPCO)
- AWBA

These companies are discussed below.

MAPCO

We met with the MAPCO, a non-government organisation that is owned by private investors. MAPCO describes itself as the business arm of the Myanmar Rice Federation, and aims to address food security concerns in Myanmar working closely together with government. MAPCO has strong links to the previous government regime, and potentially as a result IFC have deemed them to be not suitable for investment from GAFSP PrSW/IFC. We met with them to understand more about the type of investments that are being planned in the agricultural sector in Myanmar.

MAPCO is an agricultural services firm that is involved in a range of activities across the rice value chain e.g. developing its Agribusiness Service Centre concept to provide smallholder rice farmers access to a one-stop shop where they can access all of their extension services, seed, agro-chemicals and providing storage facilities. MAPCO also acts as an off-taker for rice produced by farmers and is involved in trading within Myanmar (around 80% of rice is for local consumption) and export to countries in Asia region with a target of 325,000 MT per annum for 2016 – 2018.

The business model aims to work by importing the materials required to blend NPK (Nitrogen, Phosphorous and Potassium) fertiliser in Myanmar. They intend to blend different types of NPK to

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meet the needs of farmers across Myanmar’s agro-ecological zones. They intend to offer the fertiliser to farmers through an input-credit model, recovering the costs of fertiliser by taking payment in kind.

**AWBA group**

We also met with AWBA, which is the largest agri-inputs firm in Myanmar. They currently provide agri-inputs (chemicals, fertiliser) to 4m farming households in Myanmar and account for a reported 40% of the market. They make use of dealer-based loans, through their agro-dealer network, to get credit to farmers. They also have over 1,000 agronomists as part of their company, which in their reckoning makes them the largest functional extension service in Myanmar.

AWBA were of the view that if GAFSP PrSW/IFC is to be truly additional to existing DFI/ provision of finance from private sources, it should take a more developmental approach than focusing on risk sharing arrangements and/ or investment in existing large and well-established agribusinesses, most of which in his view can already secure finance on cheaper terms than IFC could offer.

AWBA’s suggestion is that GAFSP PrSW/IFC focuses on providing investment more directly to farmers, by enabling selected farmer groups/ individual farmers to purchase equity in newly developed agricultural companies. They think that long-term development of the sector can only come if farmers have a better incentive to grow and invest in themselves – which will only come if they have a stake in the profitably and success of their agricultural activities. In such an arrangement AWBA would identify relevant sectors (examples given included strawberries and black sesame) and also provide for off-take arrangements – if GAFSP PrSW/IFC would provide investment to enable the farmers to purchase a stake in the business developed around the chosen sub-sector. This is very much a suggestion that is at concept stage, they are not clear on the size of the investment and accept that there is limited change for such an investment to provide a return in the short to medium-term.

**2.3. Next steps in the agri-inputs value chain**

The analysis of the agri-inputs value chain has identified interesting potential investment partner that could both yield investments that fit with the GAFSP PrSW/IFC criteria. However the opportunities with are at an early stage. Rather than just investment they both need technical assistance in the form of early-stage project development support to help develop further the opportunity.
3. **POULTRY VALUE CHAIN**

*Some Information in this section has been omitted for confidentiality reasons*

This section provides an overview of the poultry value chain and the investment opportunities for GAFSP PrSW/IFC identified during the country visit. The main findings are summarised below, the detail then follows.

### Summary of findings on the poultry sector

- As GDP per capita continues to grow from its current level of US$1,200 alongside the increasing trend towards urbanization it is expected that demand for poultry will increase rapidly in the future, with growth rates expected to be in the 15% to 20% per annum range.

- Due to the lack of local consumption of beef, poultry could become an important source of cheap protein in the future.

- At present poultry production in Myanmar is not competitive. Existing data suggests that it costs around US$1.6 per kg to produce a chicken in Myanmar, which is higher than regional competitors and significantly higher than in countries such as Brazil at US$1 per kg. Although domestic preference is for fresh chickens the domestic producers are currently benefiting from the import restrictions on frozen chickens.

- As demand for chickens continues to grow it is unclear that there is a strong policy rationale to continue to protect the sector, which is benefiting primarily the two main producers and leading to consumers having to pay a higher price for chicken. Therefore, measures to increase the competitiveness of domestic production are key. Given that poultry feed accounts for around 70% of costs, interventions that can reduce feed costs are critical for the future development of the sector:
  - Production of maize and (the limited) domestic production of soybean is generally of low quality/yield. Increased access to agri-inputs to increase yields and quality have an important role to play in supporting the poultry sector.
  - Soybean and wheat have to be imported into Myanmar to produce the soybean cake and soybean meal that commercial producers need. According to the available data import costs are up to 40% higher than Vietnam due to inefficiencies at the port, and due to a lack of economies of scale.

- The Dutch are currently funding a range of activities across the poultry funding chain and could provide a natural partner for interventions designed to support the growth of the poultry sector.
# 3.1. Overview of poultry value chain

The table below provides an overview of the main stages of the poultry value chain in Myanmar.

<table>
<thead>
<tr>
<th>Domestic production</th>
<th>Issues/ recent developments</th>
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<tbody>
<tr>
<td><strong>Soybeans:</strong> Soybean production in Myanmar is quite a marginal crop. It is produced mainly by smallholders in Shan State (around 80% of production occurs there); total production has remained stagnant in recent years at around 180,000 MT. Myanmar achieves yields of 1 MT per HA, which are low by regional standards e.g. China achieves 1.8 MT per HA and Thailand over 6 MT per HA. Data on soybean imports is limited, but the US Soybean Export Council reports that it exported 25,500 MT to Myanmar in 2015 – much of it purchased by for aquafeed at present. The main source of soybean imports is reported to be India.</td>
<td>One of the factors preventing the expansion of soybean production has been the low margins achieved by farmers as a result of inefficient land preparation techniques creating an opportunity cost for investing in the sector. Domestic production is also constrained by a lack of labour for harvesting soybean, also as the main harvest is during the monsoon, drying is also an issue to ensure that soybean meets moisture requirements for processing. In recent years the land devoted to soybean production in Shan State has been growing at over 3% per annum, driven by the growth of the poultry sector. However, the poultry sector continues to rely on imports for the majority of its soybean cake and meal because the quality of local production is generally not sufficient. We understand that soybean imports do not attract any additional tariffs/ taxes. It was reported to us that there is only one small family-run soy processing business in Myanmar – Mya Soy Bean. They are involved in crushing soybean to extract the oil, they use the bi-product to produce and sell soy cake, which is a less nutritious product than soybean meal. A South Korean firm, CJ Korea, is potentially considering establishing a soy crushing facility in Thilawa to satisfy growing demand for soy amongst feed producers in Myanmar. There are also reports that TVO Thailand (the largest soybean oil producer in South East Asia) has been considering entering Myanmar. The Dutch are currently funding a detailed review of the oilseeds value chain.</td>
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<td><strong>Maize:</strong> Myanmar currently produces around 2m MT of maize each year, of which around half is exported – around 75% of exports are to China. The remainder is used for a combination of human consumption and for animal feed. 90% of maize production is carried out under rain-fed conditions and carried out by smallholder farmers. The main area for production is the Shan State region. Myanmar has increased maize production significantly, partly as a result of increased yields which are now at around 4.2 MT per Ha as farmers haveCharoen Pokphand Group (Myanmar CP) from Thailand is reported to have a 70% share of Myanmar’s hybrid maize seed production. Seed Asia, a Thai company that is part of the Limagrain group, is reportedly in the process of investing in maize seed production for the Myanmar market. One of the keys to producing quality maize for animal feed production, is the use of simple maize drying techniques. Apart from the equipment used by CP Livestock, there is only one independent facility in Myanmar that has the capacity to process around 30,000 – 40,000 MT each year.</td>
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begun to use higher yielding hybrid-seed varieties. However, its yields are still significantly below regional competitors e.g. China, Vietnam, Thailand.

**Wheat:** Total wheat production has remained stable at around 200,000 MT per annum in recent years. This is because the area suitable for wheat production in Myanmar is low and because of the opportunity cost for farmers given the option to produce more lucrative crops such as rice and beans. Myanmar has had to import around 350,000 MT to meet domestic consumption needs. Yields are 1.8 MT per HA, compared to China which achieves yields of around 4.8 MT per Ha in China.

Wheat is grown mainly by subsistence farmers located in the Sagaing Division and in Shan State. The western part of Myanmar suffers from poor growing conditions, given the limited rainfall that it receives – this explains why yields are only 1.8 MT per HA.

### Poultry feed

- In 2014 total feed production was 1.7m MT. New foreign firms have entered the market: De Heus, New Hope, Sunjin and the established vertically integrated poultry firms such as Myanmar CP and Japfa are contributing to the expansion of the market – feed production has been increasing by 14.1% (CAGR) since 2012.

- **De Heus** is in the process of establishing a feed mill in Yangon. The feed mill will have the capacity to produce around 10,000 MT per month, but they have the potential to double capacity relatively easily if they need to/ as and when the market continues to develop. They will source maize from local maize producers and import the soybean. They expect to continue to sell their feed product through their agro-dealer network, through which their agro-dealers provide the feed to farmers on credit. De Heus have reportedly been in initial discussions with potential partners to consider the potential to provide inputs on credit to poultry farmers on a bigger scale/ through a more formal system, potentially targeting farmers in the Shan State region.

- **Sunjin Myanmar**, was established in 2014 but is part of the wider Sunjin group that is the biggest livestock company in South Korea (reported to be the biggest in poultry and animal feed), but also has a presence in USA, China, Vietnam and the Philippines – Sunjin is part of the Harim Group which has total sales of US$4.6bn and over 10,000 employees. In the poultry sector Sunjin makes total sales of US$1.4bn of sales and around US$2.2bn in the animal feeds business. Sunjin established a feed mill in Yangon in September 2014, which has a production capacity of 5,000 MT per month and employs around 100 people. They produce animal feed for poultry (broiler and layer feed) and for pigs and reportedly sold 36,000 MT of feed in 2015. We had a brief consultation with them; our initial understanding is that they are currently focused on trying to establish their business/ solidify their existing market share and have no immediate plans for expansion.

- **New Hope**, a Chinese poultry company with subsidiaries in Singapore and Myanmar. They entered Myanmar in 2012 opening a feed mill factory. They are a family owned business and employ 75 people in the Myanmar subsidiary and estimates production to be 30,000 MT of feed, annually. We understand that the company is currently not turning a profit as they are still trying to gain a share of the market.

- The main constraint that is faced by the feed sector is the lack of quality and quantity of local production of inputs into domestic feed production, in particular soybean and wheat. They have to import inputs from US, Brazil, Argentina etc. Importing costs are reported to be substantially higher (25 – 40%) than in markets such as Vietnam because of the inefficiency at the port and logistical challenges. Although sufficient quantities of maize are produced in Myanmar the fact that most of it is produced in Shan State creates a logistical challenge/ higher costs for the poultry producers.
Breeder and hatchery

- Both CP and Japfa are the only two firms reportedly operating breeder farms and hatcheries at the moment.
- It is currently possible to import day-old-chicks into Myanmar for a zero tariff. However, it is necessary to get a veterinary certification from the government of the country of origin and also the approval of the Ministry of Livestock and Veterinary Department in Myanmar.

Poultry production

- Myanmar’s broiler population in 2014 was estimated to be 144m birds. Poultry farming is concentrated in the Shan State, Mandalay, Sagaing, Yangon, Bago and Ayeyarwaddy regions of Myanmar. Smallholder poultry production continues to be the dominant source of chicken according to reports, but the commercial sector is growing. Smallholder production is affected negatively by a range of factors such as a lack of access to funds to purchase appropriate chicken feed and other inputs and poor hygienic and health & safety conditions – Myanmar has suffered from a number of outbreaks of bird flu in recent years.
- The commercial poultry production industry is dominated by two companies, who jointly hold around 60 – 70% share of the commercial sector:
  - **Myanmar CP.** A Thai vertically integrated company that has been active in Myanmar for over 20 years. It has four feed mills: Yangon, Mandalay, Kyaut Me and Taung Gyi; Breeder farms; two hatcheries and the only commercial slaughterhouse in Myanmar, which is based in Yangon and has a capacity of 1,500 heads per hour. Myanmar CP is estimated to have around a 40 – 45% share of the market. A rough estimate based on information gained during meetings suggests that they could turnover around something in the region of US$140m - US$160m per annum.
  - **Japfa.** An Indonesian vertically integrated company that has been in Myanmar since 1995. It has two poultry feed mills in Myanmar and is planning to open another feed mill in 2016. The company also has a broiler and layer factory, a hatchery that produces day-old-chicks and carrier out commercial broiler breeding in a number of locations. Japfa has a 20 – 25% market share of the poultry sector and a turnover of around US$80m in 2015.
- The other main companies operating in the market are:
  - **Crystal Diamond,** which is a vertically integrated operator with two feed mills. It also distributes veterinary products. It has around a 10% share of the market.
  - **Tet Chaung,** which has a presence in Shan State. It has around 6 – 8% share of the market.
  - **MRC,** which is estimated to have a less than 5% share of the market.
- One of the issues with the commercial sector is a lack of existing facilities to process the chickens. Other than Myanmar CP’s slaughterhouse, a new small slaughterhouse has recently been opened in Mandalay. Apart from this the birds have to be slaughtered at one of the country’s wet markets. There is currently significant need for additional investment in poultry slaughterhouses in Myanmar, particularly in the Yangon area. Myanmar CP is reportedly considering investing in another slaughterhouse.
- One of the factors reported to be limiting the scope for investment in additional slaughterhouses is the existing land use policies. It is said to be difficult for investors to access land for the purpose of livestock, given government’s preference for crop production.
Given the limited capacity in the existing slaughterhouses and consumer’s continued preference for live chickens, most chickens sold are slaughtered manually at one of the country’s wet markets. Yangon’s largest wet market has the capacity to handle over 100,000 birds per day. Typically over 50,000 birds are slaughtered manually on site each day. The level of hygiene at the wet markets is generally low, creating significant risk of diseases spreading amongst the chickens.

### Poultry consumption

- Consumption of poultry meat is estimated to be around 6kg per capita per year, which is low relative to South East Asian countries such as Vietnam (11.5kg) Thailand (20kg) and Malaysia (32kg). According to the Myanmar Livestock Federation, Myanmar’s consumption had been growing by around 5% per annum until 2013, but since then growth is estimated to be around 15% to 20% per annum.
- In Myanmar the local people generally do not eat beef for religious reasons and cultural preferences. As a result other than fish, poultry is seen as having significant potential as a source of animal protein particularly as GDP per capita continues to increase from its current level of around US$1,200 and the trend towards urbanisation continues.
- The market for chilled/ frozen chicken is also growing. KFC have entered Myanmar in recent years (and currently has to buy its chickens from Myanmar CP with whom it also competes in the prepared chicken food market). Japan-based Lotteria, a chicken fast food chain, also opened in Myanmar in 2013 and also buys chickens from competitor Myanmar CP. Alongside the likes of KFC and Lotteria (and CP Fresh Mart that is part of Myanmar CP), there is also increasing demand from supermarkets (City Mart being the largest and Sein Gay Har), hotels and urban consumers. However, at the moment there is a strong preference amongst consumers for fresh chickens, which in part reflects a lack of awareness about chilled/ frozen chicken consumption. Japfa spoke of the need for a campaign to promote the benefits of chilled/ frozen chickens.
- It is understood that there is a cap in place on poultry imports protecting domestic producers from competition from cheap imports, however there is some uncertainty as to the exact status of this policy. There are reports that Myanmar has recently agreed to let Brazilian poultry imports into the country and is considering opening up the market. While some information suggests that importers of frozen meat products have to produce a Certificate of Origin and indicate where the imported goods will be sold before imports are permitted, the aim of this new policy is to restrict the flow of illegal cross-border imports.
- Currently domestically produced chicken is very expensive to produce, with costs of around US$1.6 per Kg (cost of producing live chickens) compared to US$0.75 to US$1 per kg in Brazil and US$1.1 per kg in the US. The future government policy with regards to the import ban is a risk for the growth of the domestic poultry production sector in Myanmar. It is clear that without considerable investment along the supply chain, domestic producers won’t be able to compete with cheap frozen chicken imports – though an important caveat to this is that in the short-term the domestic preference is very much in favour of fresh chickens, and the cold-chain logistics are not in place to distribute frozen chicken imports across Myanmar, so the potential removal of the import ban is more a threat to the longer-term development of the poultry sector. However, if more competition doesn’t develop in the market in the coming years there is a policy question about whether consumers should have to continue to subsidise inefficient producers operating in an oligopolistic market.

### Policy constraints in poultry sector

- The poultry sector is regulated by the MLFRD who has made it a policy priority to increase GDP contribution from livestock and fisheries sector threefold.
Players across the poultry value chain have expressed uncertainty surrounding the future of poultry import restrictions. They have noted that if the poultry ban is removed, the market will be flooded with lower priced international products to which local companies cannot compete.

There is a lack of product standards for poultry (meat quality and DOC) that impacts the export potential for poultry value chain products and also contributes to hygiene concerns among domestic consumers. Hygiene and disease of livestock is monitored by the Ministry of Health.

Unclear land ownership laws restrict the ability of farmers to obtain land licenses and also restrict farmers’ self-determination of crop production. This makes it difficult to register land as collateral in obtaining loans and prevents designated lands to be used in poultry sector development. In addition, it is noted that existing regulations do not allow poultry farms to be developed on industrial land, and more generally increasing urbanisation has meant that residential areas have been encroaching on poultry farms.
3.2. GAFSP PrSW/IFC Investment opportunities in the sector

It is unclear that there will be scope for additional GAFSP PrSW/IFC investment in the poultry feed value chain in the short to medium-term, though it is possible that new entrants such as Sunjin and New Hope will be potential partners in the future.

Given the relatively concentrated nature of the sector the number of potential investment partners is limited. CP Livestock, the market leaders in the poultry sector, are reportedly able to access relatively cheap capital from banks in Thailand so have shown less interest in the opportunity to partner with vehicles such as GAFSP PrSW/IFC.
4. **Dairy sector**

*Some information in this section has been omitted for confidentiality reasons*

This section provides an overview of the dairy value chain, and the nature of the investment opportunities identified during the country visit. The findings are summarised in the box below, the detailed findings then follow.

### Summary of findings on the dairy sector

Given the current status of the sector, our view is that it is not at a stage of development that will provide opportunities for GAFSP PrSW/IFC investment in the short to medium-term. Although the sector is expected to double in size over the next eight years, it is growing from a very low base and therefore is unlikely to support large commercial investment. Though if growth continues to occur more opportunities could open up in the longer-term.

Dairy companies report difficulty in increasing demand for their products given the purchasing power of consumers. Furthermore, in Myanmar milk is currently consumed mainly in the form of condensed milk which is used in tea and coffee, beyond that consumers have not really developed much of a taste for dairy produce. To help increase demand there is need for more marketing/awareness campaigns to build local preferences for dairy products.

This suggests that any large-scale investment/entry into Myanmar’s dairy sector would need to be co-ordinated across each stage of the value chain, including developing the market. This would be risky/challenging particularly for any new (as yet unidentified) entrant.

In the short-term more effort in the form of technical assistance, provision of grants, and policy development is needed to support the development of the sector. For instance the Dutch Embassy has funded the completion of a scoping study identified a number of strategies to support the development of the sector. Their report highlighted the need for interventions to increase the technical capacity of existing dairy farmers e.g. in their application of hygienic standards, business planning and use of feed inputs, and general farm management practices to increase productivity. As a result of their work the Ministry of Livestock, Fisheries and Rural Development; FrieslandCampina (a Dutch dairy cooperative), De Heus and the Wageningen University have carried out a study to determine the potential to establish a dairy cluster in South Shan – the Dutch government has reportedly provided some seed capital to support further development of this concept.

In addition to developments within the sector, there is a need for policy intervention to consider how additional land can be opened up to increase the production of quality fodder for cattle. The existing land ownership laws make it difficult and expensive to purchase land to grow forage that has been previously focused on the rice sector.

Government intervention is also needed to reduce the regulatory burdens in place that make it difficult for dairy producers to import semen straws to enable them to improve the genetic variety of their cattle. Government policy targeting industry consolidation in the form of dairy clusters or cooperatives could bring scale to the sector to allow large international private sector investments. The industry is currently fragmented and dispersed, leading to higher costs. There is also need for wider investment in the logistics sector to support increased and more affordable access to cold-chain facilities and transportation of dairy products.
4.1. Overview of the dairy value chain in Myanmar

*Figure 4.1: Overview of the dairy value chain*

**Inputs**
- Import semen, grow forage

**Medium-sized farmers**
- 20 – 40 cows, yield ave. 4kg/cow/day

**Small-scale farmers**
- 85% of cattle, usually 2 to 3 cows, yield 1kg/cow/day

**Commercial farmers**
- Approx. 200, with 80 to 1,000 cows, yields ave. 9kg/milking cow/day

**Milk collectors**
- Carry out milking for most smallholders/medium-sized farmers.

**Milk imports**
- Over 50% of consumption – mainly condensed milk, milk powder, evaporated milk and other processed products.

**Domestic processed milk**
- Main products: Sweetened condensed milk, pasteurized milk and yoghurt. Sold to supermarkets, retail outlets, bakeries and some through the school milk program.

**Raw milk**
- Sold to bakeries, retail outlets etc. by some commercial farmers, milk collectors and some farmers

**Milk consumption**
- Approx. 600,000 tonnes/ 10kg per capita
We describe each sub-sector of the dairy value-chain below.

4.1.1. Input suppliers

Inputs for breeding

Most smallholder/medium-sized farmers lack the access to affordable finance to support investment in improved inputs and more generally they may have a limited awareness of the importance of the breed of cattle for the productivity of their stock. They generally make use of cross-breeding for reproduction.

There is currently only one artificial insemination centre operating in the country, which is operated by the Ministry for Livestock and Fisheries. This produces around 30,000 semen straws, which can be used by dairy farmers for reproduction. The straws are given free of charge, but the farmer has to pay a charge to cover the cost of getting the veterinarian to travel to their location. According to Wageningen (2014) there are a number of problems with the existing service: the number of straws produced is insufficient, the farmers have no choice of breed, and the veterinarians inseminating the cows do not have sufficient skills leading to inefficiency and waste.

Commercial farmers try to import semen themselves and often have to resort to ‘informal’ channels through Chinese trade because it was reported to us that existing government policies make it difficult to import the semen straws required to improve their stock of cattle. There are a number of regulations involved in the process, creating the opportunity for corruption by government officials.

Farmers without access to the artificial insemination centre use bulls for insemination which dilutes the breed and lowers the quality of dairy product.

Feed inputs

The market for feed inputs is generally restricted to commercial farmers. Feed costs account for around two-thirds of commercial farmers’ costs, and the quality of feed is a key determinant of the cow productivity.

The commercial farmers grow forage to feed their cattle, but some report that the opportunity cost of using the land to grow grass is too high – for instance, one of the commercial farmers reported that they now use their land to grow rice, because of the low profits that they got from using it to grow forage crops for their cattle. One of the issues is a problem of logistics. The optimal growing regions for protein-rich by-products and grazing areas are Shan, Chin and Kachin states. However, there is currently no real market for dairy produce in these areas and the costs involved in transporting either the fodder/inputs to dairy farms or finished dairy produce to consumers in Yangon/ Mandalay is prohibitive. Beyond the limited availability of land, the climate in Yangon also prohibits growing forage crops as the grass is not resilient through monsoon season.

According to Wageningen (2014) the amount of forage produce covers only 40 to 50% of the cows’ requirements. The farmers are also providing their cattle with readymade food supplies, such as cotton and sesame seed and rice powder. These products are typically bought from nearby farmers and are not designed specifically to meet the nutrition requirements of cattle and can actually in some instances be harmful to the growth and productivity of cattle stock. There is a general lack of

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awareness amongst dairy farmers, including some of the commercial farms, about nutritional needs of cattle. CP Livestock is reported to be the only agribusiness producing feed for cattle, the quality of this feed is unknown.

4.1.2. Dairy farmers

Most of the milk produced in Myanmar comes from the Mandalay region (55%), the other main producing regions are Yangon (15%) and Naypyitaw.

Domestic milk production in Myanmar is currently characterised by three farming systems:

- Smallholder farmers supply around 85% of milk production in Myanmar. It is estimated that there are around 50,000 smallholders in Myanmar owning two or three cows each. The milk supplied by smallholders is milked by milk collectors, who then supply their milk to milk processors or sell to market in the form of raw milk – some smallholders milk their own cows and then sell the raw milk themselves. The smallholders typically feed their stock with freshly cut grass and/ or feed them at the roadside. It is been reported that smallholders yield around 1 litre of milk per cow each day and can usually milk their cows for around 7 months of each year.

- Medium-sized farms that keep around 20 to 40 cows. There are a small number of these farmers in Myanmar. They give their cows some basic inputs: water; by-products from agricultural for feed alongside low cost concentrate feeds, fresh cut grass and rice straw; and they also receive some vaccination services from government programs. The cows are either milked by the farmers and/ or the milk collectors. According to surveys, they typically obtain yields of around 4 litres per cow per day.

- There are also around 200 commercial farmers in Myanmar, which each keep around 80 to 200 dairy cattle. The commercial farmers typically feed their cows with roughage and different self-mixed concentrates, but can’t afford to purchase vitamins and minerals for their cattle. However, they have access to a local veterinarian to apply the necessary vaccinations – some of the commercial companies such as Silvery Pearl and WALCO provide veterinary services to smallholders/ medium-sized farmers. It is estimated that they typically obtain yields averaging around 9 litres per cow each day. The commercial farmers often supplement the milk produced from their own farms, by purchasing from medium-sized/ smallholder farmers through contract farming arrangements.

The main issue affecting all dairy farmers is a lack of productivity, which is caused primarily by the poor quality of feed given to the cows. This leads to a combination of low yields when the cow is lactating – average yields can be higher than 20 litres per cow per day in commercial farms in developed countries; short lactation periods of around 6 to 7 months, and long intervals in the periods between lactation of 14 to 18 months. This compares to more typical industry standards of lactation periods of 10 to 11 months per year and intervals of one year – though there are considerable variations for this depending on the breed.
4.1.3. Large commercial dairy farms and processing activities

The milk processors are split into the vertically integrated firms that own their own dairy farms (some supplement their production by collecting milk from farmers), and those that rely on milk collected from farmers under contract farming arrangements.

The main processed dairy products are:

- Condensed milk
- Pasteurized milk
- Yoghurt products
- Ice-cream

Products such as milk powder and UHT milk are produced in Myanmar, but are mostly imported. While dairy products such as cheese and evaporated milk are also reliant on imports.

In practice there are not official/enforced standards for milk production at present. Though WALCO and Double Cow have obtained a certificate from the Food and Drug Agency as Myanmar moves towards joining the ASEAN free trade zone and other processors are reportedly in the process of obtaining certification. None of the government agencies have the capacity to carry out regular testing of the quality of processed milk products.

The table below gives an indication of the size and processing activities of the largest dairy farms, in practice none of them are currently big enough to support an investment of the size required by the GAFSP PrSW/IFC investment criteria.

Table 4.2: Commercial dairy farmers in Myanmar and their processing activities

<table>
<thead>
<tr>
<th>Company</th>
<th>Approx. Farm size</th>
<th>Processing activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM dairy farm</td>
<td>1,100 cows in Yangon, 50 cows in Naypyidaw</td>
<td>Around 300 of the cows are milking. It produces 80% pasteurized milk and 20% yoghurt, which is distributed to supermarkets and bakeries.</td>
</tr>
<tr>
<td>Silvery Pearl dairy</td>
<td>610 cows in Yangon (96 on the farm, the rest through contracted farms)</td>
<td>It is reported to be one of the biggest milk and yoghurt producers in Myanmar. It has 300 employees and was established in 1999</td>
</tr>
<tr>
<td>Super Cow</td>
<td>400 cows across Yangon and Naypyidaw</td>
<td>Produce 1 MT of milk per day, which is used to make pasteurized milk (around 60% of production) sold under their Super Cow brand (1 litre bottle). They also make yoghurt and ice cream (around 40%). They sell their products to local supermarkets.</td>
</tr>
<tr>
<td>Fun Hwa</td>
<td>300 cows in Yangon, 100 in Naypyidaw</td>
<td>Produces pasteurized milk and yoghurt. It varies yoghurt production depending on market demand. Sells to bakeries, hotels and supermarkets.</td>
</tr>
<tr>
<td>Kyalsinthant</td>
<td>200 cows including contracted farms</td>
<td>Produces pasteurized milk and yoghurt.</td>
</tr>
<tr>
<td>Unison</td>
<td>200 cows in Naypyidaw</td>
<td>They produce raw milk, yoghurt and milk powder. According to reports they have been transitioning away from milk to pig production.</td>
</tr>
<tr>
<td>Company</td>
<td>Activities</td>
<td></td>
</tr>
<tr>
<td>-----------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Shwelamin</td>
<td>200 cows in Pyawbwe Produces milk for their condensed milk producing factory.</td>
<td></td>
</tr>
<tr>
<td>December</td>
<td>200 cows in Pyin Oo Lwin Produces raw milk which they use in their own restaurant and sold to supermarkets in Mandalay.</td>
<td></td>
</tr>
</tbody>
</table>

*Source: CEPA analysis, Wageningen (2014)*

We held consultations with Myabuyin and WALCO so present a more detailed summary of their activities below.

### Table 4.3: Dairy processors

<table>
<thead>
<tr>
<th>Company</th>
<th>Activities</th>
</tr>
</thead>
</table>
| Myabuyin  | We consulted with Myabuyin via telephone as they are based in Mandalay.  
Myabuyin is the biggest condensed milk producer in Myanmar, and reportedly account for 40% of the condensed milk sales in the country.  
They have around 300 employees and 20 branches across Myanmar.  They are a locally owned company and currently have no partnership with a foreign company.  
Their processing plant produces around 10,000 litres of condensed milk per day, which they sell in the local market.  
They source their milk from local farmers through a contractual arrangement – they have around 1,200 local farmers under contract and in addition have a stock of 50,000 cattle.  
The company also has a sugar mill; it uses most of the product from that mill to produce its condensed milk. |
| WALCO     | Win Agro-Livestock Co., Ltd (WALCO) is a dairy producer based 44 miles from downtown Yangon.  Dr. Khin Hlaing, Managing Director of WALCO, is also the Secretary of the Myanmar Dairy Association.  
The processing plant produces 2,000 litres per day, sourced through contracted farmers.  
WALCO has 30 milking cows used for demonstration purposes only, but plans to add another 60 cows to contribute to dairy production.  WALCO, along with Double Cow are the only two FDA certified milk processors in Myanmar.  They maintain high standards of quality through extensive testing upon collection and provide training to contracted farms.  WALCO also has relationships with New Zealand veterinaries that assist in the AI process.  The company employs around 50 people for processing and milk collection.  They collect milk twice a day from seven suppliers, each of which have around 5-10 cows.  Products include pasteurized milk, yoghurt and butter, sold to supermarkets, retail outlets, bakeries and hotels throughout Yangon. |

*Source: CEPA analysis, Wageningen (2014), Asia Dairy Network (2014)*

#### 4.1.4. Milk collectors

As described below a number of the main milk processors currently have no dairy farm, and so rely on their contract farming arrangements/ the work of milk collectors to get access to their required milk inputs. The milk collectors operate independently, but some of the milk processors employ directly their own collectors. The informal contracts work based on long-standing relationships, which tend to reduce the collectors’ risk of receiving low quality milk from farmers that has had water or other substances added.  

As mentioned above, the milk collectors are also typically responsible for milking the cows of both smallholder and medium-sized dairy farmers. The collectors therefore play a critical role in the value chain. At present the collectors lack training and awareness of appropriate dairy farming techniques. They are reported to be a key source in the spread of disease because of the poor standard of hygiene.
standards that they follow. Furthermore, the collectors make use of quite rudimentary collection and distribution technology; they collect the milk in plastic or metal bins and make use of motorbikes and cycles to transport the milk to processors and retail outlets.

4.1.5. Imports

At the moment over 50% of dairy consumption is covered by imports. The main reason is that domestic production is inefficient/ of low quality and so can’t compete on price with imports. Total official imports are estimated to amount to $40m per annum, though in addition to this there is a large trade in imports through unofficial channels. Thai-based diary processor Dutch Mill accounts for the largest share of imported UHT, pasteurized milk and yoghurt.

The main dairy product imported into Myanmar is sweetened condensed milk. According to Wageningen (2014), in 2010/11 around 18,000 MT was imported at an average import price of US$0.973 per kg – this compares to the domestic wholesale price of between US$1.14 per kg and US$2.70 per kg. Another important milk product is milk powder that is often repackaged or used by domestic processors to make condensed milk.

4.1.6. Dairy consumption

Total dairy consumption in Myanmar is still very low. It is estimated that 600,000 MT of dairy products are produced each year, which implies that around 10kg of milk and dairy products are consumed in Myanmar each year per capita (the global average is over 100kg per year). However, it is expected that as urbanisation continues dairy consumption will grow rapidly. For instance, Yoma predict that dairy consumption will grow at similar levels to China (dairy sector has grown by a factor of 14 since 1998) and Vietnam as Myanmar’s economy grows over the coming years. Whilst available estimates that demand will double within the next eight years.

At the moment most dairy consumption in Myanmar is in the form of condensed milk which is used in tea and coffee. The other main products consumed are pasteurized milk, yoghurt and ice cream. Most consumption is in the major cities: Yangon, Mandalay and Naypyidaw. Although the sector may grow as a consequence of urbanization and increasing disposable income for consumers, until people develop the culture/ taste for drinking milk on its own it is unlikely that per capita consumption levels will increase towards the global average. It is thought that expanding the school milk programme (which currently reaches around 3,500 children, compared to the 500,000 beneficiaries in Vietnam) could, alongside providing immediate benefits in the form of improved nutrition for children, help to develop consumers’ preference for milk in the longer-term.

In addition to the lack of preference for drinking milk, consumption is currently constrained by the fact that the price of milk is too high for most consumers in Myanmar to afford. The high cost of milk is driven mainly by the high costs of cattle feed. For example, one of the agribusinesses with which we consulted explained that they had carried out investment in a UHT processing facility a number of years ago, but they found that consumers could not afford to purchase UHT milk product (which retails for approx. 1,500 Kyat or US$1.25 per litre). As a result their machinery currently lies idle.
4.2. Investment opportunities in the dairy sector for GAFSP PrSW/IFC

Overall, our assessment of the dairy sector is that it is currently too small to yield a pipeline of investment opportunities for GAFSP PrSW/IFC. We consulted with some of the largest dairy agribusinesses in Myanmar and they are generally operating at a size that would make it infeasible to support investments in a project size in excess of US$5m. This reflects the fact that the dairy sector in Myanmar is currently too small to support large investment, given current demand for milk.
### Annex A: List of Stakeholders Consulted

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>June Industry</td>
<td>Fertiliser</td>
</tr>
<tr>
<td>MAPCO</td>
<td>Agricultural services, fertiliser</td>
</tr>
<tr>
<td>AWBA</td>
<td>Agri-inputs</td>
</tr>
<tr>
<td>De Heus</td>
<td>Animal feed</td>
</tr>
<tr>
<td>Green Field Myanmar/ Myanmar Livestock Federation</td>
<td>Input supplier/ federation</td>
</tr>
<tr>
<td>Golden Plain</td>
<td>Provider of training services in livestock sector</td>
</tr>
<tr>
<td>Shan Maw Myae</td>
<td>Organic fertiliser</td>
</tr>
<tr>
<td>Seven Golden Lions</td>
<td>Fertiliser and agro-chemical imports</td>
</tr>
<tr>
<td>Supercow</td>
<td>Commercial dairy farmer</td>
</tr>
<tr>
<td>IFC</td>
<td>Investor</td>
</tr>
<tr>
<td>Infracap Myanmar</td>
<td>Project developer</td>
</tr>
<tr>
<td>Myabuyin (telephone consultation)</td>
<td>Dairy</td>
</tr>
<tr>
<td>IFC</td>
<td>Investor</td>
</tr>
<tr>
<td>Capital Diamond Star Group (CDSG)</td>
<td>Agri-inputs/ logistics</td>
</tr>
<tr>
<td>Japfa</td>
<td>Poultry</td>
</tr>
<tr>
<td>Netherlands Economic Mission</td>
<td>Donor</td>
</tr>
<tr>
<td>WALCO</td>
<td>Dairy</td>
</tr>
<tr>
<td>Silvery Pearl</td>
<td>Dairy</td>
</tr>
<tr>
<td>Ayeyarwaddy Farmers Development Bank (A Bank)</td>
<td>Finance</td>
</tr>
<tr>
<td>Kospa Limited (Yoma Strategic Holdings Group)</td>
<td>Logistics</td>
</tr>
<tr>
<td>Myanmar Dairy Nutrition Co.</td>
<td>Dairy</td>
</tr>
<tr>
<td>Myanmar Fruit, Flower and Vegetable Producer and Exporter Association</td>
<td>Horticulture</td>
</tr>
<tr>
<td>Maou Oak Shaung International</td>
<td>Agro-trading/Logistics &amp; Sesame</td>
</tr>
<tr>
<td>Myanmar Pulses, Beans, Sesame Seeds Merchants Association</td>
<td>Sesame seed</td>
</tr>
<tr>
<td>Sunjin (consulted by telephone)</td>
<td>Poultry</td>
</tr>
<tr>
<td>New Hope (consulted by telephone)</td>
<td>Poultry</td>
</tr>
</tbody>
</table>