Value Chain Market Research for Nkhoma, Chilenje, Nthondo and Chikwina-Mpamba Area Programmes, Malawi

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Executive Summary

World Vision Malawi, Farm Concern International and Vision Fund Malawi have been implementing the transforming household resilience in vulnerable environments (THRIVE) project in Malawi across four Area Programmes of Nkhome & Chilenje AP (Lilongwe district), Nthondo AP in Ntchisi district and Chikwina-Mpamba in Nkhata-Bay district. This is achieved through providing promoting agricultural productivity and ensuring easy access to potential markets by organizing them into Commercial Producer Groups (CPGs) and Commercial Villages (CVs). The purpose of the market research is to carry out mapping of the agricultural value chain targeting roots and tubers, grains and legumes, fish products, fruit and vegetable markets in and connected to target Aps. The study analyses the demand, supply and operational as well legal issues related to the markets to ensure understanding of the current situation of the value chain operated by the small farmers.

The study used a value chain analysis to identify various processes and actors along the agricultural value chain. Data were collected from the main actors in the value chain at different segments including input suppliers, producers, formal and informal traders and business support providers. Random and non-random sampling methodologies were used on the basis of functional roles of the various actors.

Value Chain Mapping

This value chain analysis presents results for each AP separately from chapter 4 while this section presents roles, responsibilities and challenges faced by different value chain actors in general. The study identified the main actors in the agricultural value chain in the target APs as input suppliers, producers, traders, supermarkets, processors, exporters and consumers. Personal interviews and discussions with these actors indicated that there a few service providers involved in the value chain map including government, development partners and microfinance institutions. However it was observed that majority of the service providers did not have a strong presence amongst producers. The major channels in the target APs included fresh sale of agricultural commodities at the farm gate, in local markets, direct home consumption and sales in the urban main markets. Value addition is rare among producers and was only reported for fish in terms of smoking and sun drying.

Input suppliers: Farmers access agro inputs from different sources including agrovets (63%), own recycled seeds (40%), government (25%), seed companies (17.5%), neighbours (13%) development organizations (5%), and seed multipliers (2%); an indication that an individual farmer can have multiple sources of inputs. Small scale input suppliers in the villages source inputs from distributors/agents then sell directly to farmers. In some rare occasions, large input stockists directly distributed to farmers during farmer field days. However the overall field observations indicated that input suppliers (Agro-Vets and stockists) had a poor presence in the rural areas. Fertilizer and planting materials are the most accessed agro inputs among farming households. The major challenges to input access included high cost (67%), unavailability of inputs at the time when needed (32%), high cost of accessing inputs due to long distances to the agro input outlets (17.5%), lack of knowledge on input use (13%) and poor quality of inputs (3%).
Crop production is dominated by food crops especially maize, groundnuts, and soya mostly for subsistence purposes. There is high use of improved planting materials especially for grains and legumes although farmers are mostly using indigenous seeds for beans, cassava, Irish potatoes, and sweet potatoes. Overall, the current yield levels are far too low compared to attainable yield for all the crops grown. As such farmers are foregoing huge incomes for not attaining the potential yield levels. In crop production, farmers reported the following challenges:

Source: Farm Concern International (FCI), 2016

Figure 2: Proportion of farmers experiencing different production challenges

Source: Farm Concern International (FCI), 2016
Market analysis for the target commodities: This study analysed the market size for identified commodities by estimating the weekly volumes (MTs) traded in each of the sampled markets. Annual volumes were estimated by first multiplying the average weekly volumes of each commodity sold in a given market during the peak period by the number of weeks in the peak period. Similarly, the weekly volume sold during the off-peak period were also multiplied by the number of weeks in the off-peak period and the two components were then summed up as follows:

Annual Volumes = \( (V_p \times W_p) + (V_{op} \times W_{op}) \)

Where:

\( V_p \) = weekly volume during the peak period in MT
\( V_{op} \) = weekly volume during the off-peak
\( W_p \) = number of weeks in the peak period
\( W_{op} \) = number of weeks in the off-peak period

The traders also estimated the weekly volumes that the market can accommodate throughout the year which was used to estimate market potential. The total annual market size for the target commodities across the sampled markets is estimated at USD 5,214,234 which is only 38% of the total market capacity. This means that there exists an unmet demand for the target commodities in the sampled markets valued at USD 8,488,753 annually. Fruits and vegetables worth USD 1,404,187 are annually traded across the sampled informal wholesale markets which is only 16% of the market capacity. Fish worth USD 2,029,368 and roots and tubers worth USD 393,608 are traded annually accounting for only 51% and 34% of the market capacity. However, the market findings indicated that informal markets are usually oversupplied with grains and legumes where 3,419MT of legumes and grains are supplied in the informal markets against the market capacity of 2,174MT which is 157% of what is demanded by the market. However, huge market gaps exists for all the target commodities in the formal markets estimated at 1,035,000MT for grains and legumes, 891,000MT for fruits and vegetables and 11,000MT for Irish potatoes.
Figure 3: Value chain mapping for the target commodities

Source: Farm Concern International (FCI) 2016
Marketing of the Targeted Commodities in the Target APs

Informal Markets Supply System

The study profiled four main wholesale informal markets across the four APs including Mzuzu, Ntchisi, Mpamba and Mponela markets. Overall, there are about 1,592 wholesalers dealing with grains, tubers, roots, fruits, vegetables as well fish and fish products. Majority of the traders are male across all the categories of the market players as indicated in figure 4. Overall, target commodities valued at USD 5,214,234 are traded annually in the four wholesale informal markets. However, this is only 38% of the market capacity indicating an annual market deficit valued USD 8,488,753. Mzuzu and Mpamba are the biggest markets although they experience the largest annual deficits as indicated in figure 5. Traders across the informal markets reported that soya, maize and leafy vegetables are over supplied especially during the harvesting season. As such, maize and soya prices drop during this period while huge post-harvest losses at the market level are experienced for the leafy vegetables which have a short shelf life.

Figure 4: Trader types and gender across sampled markets

Source: Farm Concern International (FCI), 2016

Figure 5: Annual market size (USD) and market deficit for the sampled markets

Source: Farm Concern International (FCI), 2016

Figure 6: Annual volumes (MT) traded in the sampled markets compared to market capacity

Source: Farm Concern International (FCI), 2016

Figure 7: Annual value (USD) of different commodities traded annually across the sampled markets

Source: Farm Concern International (FCI), 2016
However, banana, cassava, beans and sweet potatoes are the rarest commodities in the informal markets with traders only able to supply 9%, 10%, 29% and 33% respectively of the existing market capacity as indicated in table 1. Typically, informal markets have no formal grades, lacks commodity traceability and they rarely use standard measures therefore participation is high.

Table 1: Market demand and supply for different commodities across different market

<table>
<thead>
<tr>
<th>Fruit and vegetables</th>
<th>Annual Volume traded (MT)</th>
<th>Annual Market Capacity (MT)</th>
<th>Total Annual value (USD)</th>
<th>Market deficit (MT)</th>
<th>Value (USD) of market deficit</th>
<th>Volume traded as a % of market capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banana</td>
<td>2,706</td>
<td>30,852</td>
<td>278,757</td>
<td>28,146</td>
<td>2,943,179</td>
<td>9%</td>
</tr>
<tr>
<td>Cabbages</td>
<td>1,305</td>
<td>2,279</td>
<td>168,751</td>
<td>1,012</td>
<td>123,342</td>
<td>57%</td>
</tr>
<tr>
<td>Leafy vegetables</td>
<td>58</td>
<td>52</td>
<td>25,244</td>
<td>- 7</td>
<td>- 266</td>
<td>113%</td>
</tr>
<tr>
<td>Onion</td>
<td>331</td>
<td>437</td>
<td>267,776</td>
<td>110</td>
<td>69,694</td>
<td>76%</td>
</tr>
<tr>
<td>Tomato</td>
<td>1,657</td>
<td>4,214</td>
<td>605,914</td>
<td>2,632</td>
<td>1,928,241</td>
<td>39%</td>
</tr>
<tr>
<td>Rape</td>
<td>20</td>
<td>34</td>
<td>7,450</td>
<td>14</td>
<td>5,908</td>
<td>60%</td>
</tr>
<tr>
<td>Mustard</td>
<td>21</td>
<td>36</td>
<td>7,229</td>
<td>16</td>
<td>6,805</td>
<td>57%</td>
</tr>
<tr>
<td>Carrot</td>
<td>29</td>
<td>45</td>
<td>43,068</td>
<td>16</td>
<td>27,111</td>
<td>65%</td>
</tr>
<tr>
<td>Fish and fish products</td>
<td>516</td>
<td>1007</td>
<td>2,029,369</td>
<td>491</td>
<td>2,081,764</td>
<td>37%</td>
</tr>
<tr>
<td>Grain and Legumes</td>
<td>Beans</td>
<td>121</td>
<td>420</td>
<td>91,206</td>
<td>310,115</td>
<td>29%</td>
</tr>
<tr>
<td>Maize</td>
<td>2,806</td>
<td>552</td>
<td>816,531</td>
<td>-2,254</td>
<td>-578,031</td>
<td>508%</td>
</tr>
<tr>
<td>Rice</td>
<td>417</td>
<td>696</td>
<td>443,750</td>
<td>279</td>
<td>295,664</td>
<td>60%</td>
</tr>
<tr>
<td>Soya</td>
<td>3,223</td>
<td>1,248</td>
<td>1,260,281</td>
<td>-1,975</td>
<td>-282,367</td>
<td>258%</td>
</tr>
<tr>
<td>Roots and tubers</td>
<td>Sweet Potatoes</td>
<td>1,109</td>
<td>3,331</td>
<td>221,775</td>
<td>734,241</td>
<td>33%</td>
</tr>
<tr>
<td>Irish potato</td>
<td>663</td>
<td>1,169</td>
<td>153,146</td>
<td>507</td>
<td>150,149</td>
<td>57%</td>
</tr>
<tr>
<td>Cassava</td>
<td>98</td>
<td>1,001</td>
<td>18,687</td>
<td>903</td>
<td>128,980</td>
<td>10%</td>
</tr>
</tbody>
</table>

Source: Farm Concern International (FCI) 2016

Formal markets for the target commodities

There exist formal buyers for most of the target commodities; among the sampled entities included supermarkets, processors, exporters, schools, hospitals, National Smallholder Farmers Association of Malawi (NASFAM) and hotels. The exporters identified deal with soya and maize. From the available data, huge deficits exists for all target commodities especially maize (399,122MT), soya (527,775MT) and 823,430 cabbages annually across the 3 districts of Ntchisi, Lilongwe and Mzimba. This signals an opportunity for farming households to intensify their production to satisfy the existing demand. Appendix 1 shows the specific market demands for various crops across different districts.

Auction Holding Commodity Exchange (AHCX), is an electronic market place where buyers and sellers transact trade for agricultural commodities. The market place provides standardized forward contracts between buyers and sellers with clear quality specifications. It deal with soya, groundnuts, maize, cowpea, rice, sugar bean, sunflower and pigeon peas and has actually approached FCI Malawi seeking market linkage with producers. In 2015, this market recorded a demand of 56,000MT of soya from its forward contracts in its marketing platform from local processors.
Formal markets provide an opportunity for farmers to link to a consistent source of income, with clear market signals coming from the buyers. However, formal markets reported strict quality standards, minimum tonnage requirements and forward contracts where prices may be below those in informal markets. As such farmers agree to lower prices in exchange for longer term buying arrangements, access to services, and social investments. For instance the minimum tonnage for AHCX is 0.5 MT while maize must be packaged in clean 50kg polypropylene bags such that grade 1 maize should have moisture content of 12.5%, 1% foreign matter and a maximum of 4% damage level; grade 2 has moisture content of 12.51-14%, 1.5% foreign matter and maximum 6% damage level. In addition, farmers must transport their produce to specific collection centres. This suggests that individual farmers are not likely to access such formal markets individually due to their production and capacity limitation.

The sampled formal buyers identified in Mzuzu included Mzuzu Coffee, Mzuzu Tourist Lodge, Sunbird Mzuzu, Nyama World, Mzuzu University, Shoprite, and Catering Solutions. Within Lilongwe, the formal buyers sampled included Dzukz girls secondary school, FAUM, Shoprite, Kamuzu Central, CP Foods, Mulli Brothers, Simama Hotels, SPUR, and William Murray while within Ntchisi district they included five aggregators, Export Trading Group, Farmers World, NASFAM, Chicco Investment and Kulima Gold.

Table 2: Demand and supply across assorted formal market

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Annual demand (MT)</th>
<th>Annual supply (MT)</th>
<th>Average Annual deficit (MT)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grains and Legumes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beans</td>
<td>28,936</td>
<td>21</td>
<td>28,915</td>
</tr>
<tr>
<td>Maize</td>
<td>399,450</td>
<td>328</td>
<td>399,122</td>
</tr>
<tr>
<td>Millet</td>
<td>24,000</td>
<td>2,000</td>
<td>22,000</td>
</tr>
<tr>
<td>Rice</td>
<td>30,016</td>
<td>31</td>
<td>29,984</td>
</tr>
<tr>
<td>Ground nuts</td>
<td>28,240</td>
<td>1,137</td>
<td>27,103</td>
</tr>
<tr>
<td>Soya</td>
<td>528,300</td>
<td>525</td>
<td>527,775</td>
</tr>
<tr>
<td><strong>Fruits and Vegetables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cabbage</td>
<td>824,216</td>
<td>786</td>
<td>823,430</td>
</tr>
<tr>
<td>Tomatoes</td>
<td>25,080</td>
<td>85</td>
<td>24,995</td>
</tr>
<tr>
<td>Mustard</td>
<td>34,667</td>
<td>35</td>
<td>34,632</td>
</tr>
<tr>
<td><strong>Tubers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irish potatoes</td>
<td>12,421</td>
<td>541</td>
<td>11,880</td>
</tr>
</tbody>
</table>

Source: Farm Concern International (FCI) 2016

**Consumers’ preference**

Consumers were found to prefer different varieties for maize, rice, tomatoes and types of fish and farming households and traders should grow, rear and source such varieties. Table 3 summarizes the preferred varieties of crops and types of fish preferred.

Table 3: Consumer preference

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Preferred variety/breed/type</th>
<th>Commodity</th>
<th>Preferred variety/breed/type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maize</td>
<td>Local varieties</td>
<td>Banana</td>
<td>Mulanje</td>
</tr>
<tr>
<td>Rice</td>
<td>NASFAM &amp; Kilombero</td>
<td>Cassava</td>
<td>Non bitter</td>
</tr>
<tr>
<td>Fish</td>
<td>Fresh (Usipa, Milamba, Utaka, Matemba), sundried, smoked, deep fried</td>
<td>Sweet Potato</td>
<td>Kenya</td>
</tr>
<tr>
<td>Tomato</td>
<td>Rodent, Tengeru</td>
<td>Mustard</td>
<td>Florida Broad leaf</td>
</tr>
</tbody>
</table>

Source: Farm Concern International (FCI) 2016
Conclusion and Recommendations

The findings identified a number of key issues affecting value chain efficiency and opportunities for interventions that can improve livelihood of smallholder farmers. The study has shown that the input sector across the four Area Programmes is highly diversified and farmers use both formal and informal agro input systems. Although the informal inputs system is important in terms of volume used, the formal seed system is important in terms of quality of the inputs purchased. Informal systems are governed by local knowledge and experiences and the quality of the inputs cannot be verified. There are challenges reported in input distribution system especially where farmers travel for more than 26Km to access inputs. Although government of Malawi has been found as a key player in seed system among small scale farmers, rural infrastructure is a key challenge which could be cause of some farmers using informal seeds. Joint acquisition of inputs is very rare with only about 4% of farmers procuring inputs jointly.

Constraints and challenges facing the agricultural value chain and proposed interventions

| Production | • Erratic rainfall  
|           | • Use of Indigenous planting materials  
|           | • Poor access to improved seeds  
|           | • Poor use of GAP  
|           | • Declining soil fertility  
|           | • Low adoption labour saving technologies and mechanization  
|           | • Pest and diseases  
|           | • Limited access to agricultural finance  
| Post-harvest handling | • High cost of post-harvest chemicals leading to rotting  
|           | • Lack of knowledge and skills in value addition  
| Marketing at household level | • Lack of collective marketing  
|           | • Limited access to market information by farmers.  
|           | • High cost of storage and transportation  
|           | • Low quality to access formal markets.  
|           | • Poor road infrastructure  
| Commodity trading across local markets | • Lack of storage facilities in the market  
|           | • High transport cost since sourcing areas are far  
|           | • Commodity loss of quality in transit  
|           | • Limited capital  
|           | • Limited trading sheds in the local markets  
|           | • Poor infrastructure to the sourcing areas  

Proposed interventions

• Improved access to planting materials  
• Promotion of water harvesting and NRM technologies  
• Train farmers on GAP  
• Collective action in input acquisition

• Train on post-harvest handling and domestic value addition  
• Promote use of simple mechanization  

• Organize farmers into trading blocs  
• Facilitate business partnerships with traders, input suppliers and other support services providers  
• Promote group savings
Farmers are experiencing numerous challenges in crop and livestock production including crop pests and diseases, low access to inputs, high cost of inputs, lack of markets, unreliable rainfall and lack of storage facilities leading to rotting of some crops. Education level among farmers is relatively low which could influence adoption of technologies for improved productivity. As well most households are still producing for subsistence purposes with staples getting the largest land share. Crop productivity remains far below the attainable yield levels especially for maize, tomatoes and groundnuts. As such farmers are forgoing huge incomes which they could otherwise earn with increased productivity. Although maize has the largest land share, it has one of the least gross margins per acre unlike horticultural commodities which rare despite their gross margin being the highest. Majority of farmers engage in crop farming individually and group farming was only mentioned for tobacco which is not a target crop in this study.

The study reveals that majority of farmers sell their produce at the farm gate with majority selling to brokers. For over 70% of farmers who participate in marketing of their produce, it’s the buyers who determine the prices. Collective marketing is very rare among farmers leaving them prone to exploitation by brokers and middlemen. Due to poor road transport especially during the rainy seasons, farmers cannot access the markets and end up losing most of their harvest. Government influence on marketing of agricultural commodities has been concentrated primarily on the export market especially for horticultural commodities. Government influence on the domestic market is seen primarily through construction of public open air markets which does not fully address the inherent issues in market access. In presence of poor rural infrastructure, the costs of collecting and transporting products could be higher than the revenues received. The exploitation by middle men in the market was evidenced by situation where market gate prices were lower than the farm gate prices which discourage farmers participating in the market directly.

Overall, agricultural commodities worth USD 8,488,753 are annually traded in the six sampled wholesale informal markets. However, this is only 38% of the market potential and huge market deficits still exist. Traders are forced to source commodities from as far as Mozambique and Tanzania. Greater supply deficits prevail in the formal market with a soya exporter reporting only being able to access 10% of what is demanded. However the study established that the main supply chain for grains and legumes is through small traders (middlemen) who establish a buying point in the villages or markets. These agro-traders are seasonal and are mostly present in harvesting periods. Their outlets include cereal shops, agro-processing companies and Auction Commodity Exchange Limited as opposed to informal wholesale markets.

With reference to other cross cutting issues in the value chain, crop farming is the main source of livelihood and income. Mostly households use income earned from farming to meet basic needs. Over 75% of the households reported to be saving part of their income mostly in the village banks while value addition was a very rare practice. In addition, 56% of households reported to have received a form of business support service in their enterprise development.
Based on these findings, the following recommendations are made:

1. Public-Private Sector Partnerships: Promote public-private partnerships in agro input supply chain system for positive seed selection. Farmers need to be trained to identify and differentiate healthy plants to be earmarked for seed development while the crop is still in the field. This system is recommended for roots and tubers where farmers mostly use indigenous planting materials. For legumes and horticultural crops, partnerships with research stations, e.g., ICRISAT, IITA, Chitedze, and seed companies will ensure access to high quality improved seeds. Collaboration with between THRIVE and private agro input suppliers will enhance access to quality agro inputs by farmers.

2. Market Partnerships: The competitiveness of the traditional informal markets is well beyond what the government alone could finance and partnering with donors and private sector will thus be crucial. Facilitation of innovative market linkages between farmer groups and formal & informal traders will lower product bulking and handling costs.

3. Collective Action for Smallholder Farmers: Graduating the existing informal farmer groups into trading and input access blocs will enhance farmers’ ability to act collectively for improved commodity prices and reduction of input cost.

4. Capacity Development: Design training materials and manuals for farmers in local language adapted for beneficiaries with low levels of formal education. Use of both visual and audio visual approaches including demonstrations especially on new technologies is recommended. In addition, promotion and training farming households on good agricultural practices in collaboration with ministry of agriculture is recommended.

5. Value Chain Prioritization and Commercialization: Based on agro-ecological suitability, existing demand and gross margin of the crops that are already grown in the APs, the study recommends promotion of cassava, tomatoes, Irish potatoes, sweet potatoes, maize, and soya in Nkhoma AP. In Chikwina-Mpamba AP, the study recommends cassava, sweet potatoes, rice, maize, and tomatoes while in Chilenje AP cassava, Tomatoes, sweet potatoes, Irish potatoes, maize, and soya are recommended for promotion. For Nthondo AP, sweet potatoes, soya, maize, and tomatoes are recommended for promotion. There is huge demand both in informal and formal markets apart from maize and soya where only in formal markets we have unmet demand including millers, schools, cereal shops and exporters for soya.

6. Formal Buyer Partnerships: Potential market for grains and cereals includes Auction Holdings Commodity Exchange who are willing to enter into a partnership with the THRIVE project. The market has an electronic system which automatically updates farmers on market prices and information on commodity demand. To address the challenge of lengthy logistical processes during marketing of commodities, the company has identified aggregators who can be linked to farmers.