SOYBEAN VALUE
CHAIN ANALYSIS

MID-PROJECT REPORT

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Wa, Upper West Region, Ghana
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1.0 INTRODUCTION AND BACKGROUND
The Greater Rural Opportunities for Women (GROW) project is a six year project funded by both the Mennonite Economics Development Associates (MEDA) and the Department of Foreign Affairs, Trade and Development (DFATD). The main goal of the project is to improve food security for families in the Upper West Region and the Northern region of Ghana by assisting women farmers to increase productivity, link to sustainable markets, and to create nutrition awareness among beneficiaries.

The implementation of the project started in April 2012 with a goal of reaching 20,000 women farmers using a value chain approach. The target crop for the project is soybeans based on the following factors:

- It is a traditional crop in the northern part of Ghana
- It is a crop which women play a large role in terms of cultivation
- It has high market potential value when compared with other crops
- The multiple uses of the soybean

The project is now at its mid-point. An update on the state of the soy value chain was conducted to find out the trend of changes in the industry. The analysis looked at the various actors of the value chain; both the primary value chain actors and the support service providers. The analysis was conducted from 2nd Feb 2015 to 13th Feb 2015.

The Ghana VC team conducted interviews with – different value chain actors from all levels of the chain. See the Annex for a complete list of individuals, and entities met.

2.0 RESEARCH METHODOLOGY
The research team comprised of the MEDA-GROW Value Chain Unit:

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Hilda Abambire - Value Chain Coordinator
Mohammed Fatawu - Value Chain Officer
Kevin Linklater - Business Development Intern

The exercise covered all the main stakeholders and actors in the soy value chain in Ghana, ranging from the end markets of the soybeans industry and downstream end users which are mostly located in the southern part of Ghana, to the northern part of the country where producers, aggregators and other upstream value chain actors are predominately located.

The research employed semi-structured interviews with the aforementioned VC actors except for the farmer groups and seed growers association where focus group discussion was used to create room for more interactive discussion with the multiple participants from these groups. Secondary data was also explored to find out about the changing trends or situational analysis of the soybeans subsector.

2.1 Research Limitations
The choice of semi-structured informant interviews was determined as the best method for gathering primary data. However, there are some cautions that must be taken in terms of possible errors or
inaccuracies; recall error is a distinct possibility, as well as the possibility that interview subjects told the research team what they thought they wanted to hear.

3.0 SITUATIONAL ANALYSIS

3.1 End Markets

*International end markets*

1. World soy prices: World prices of soybeans dropped fairly significantly in 2014 (22%), coming off of the record high prices seen in 2012/13. This was mostly due to strong output from key countries, notably the United States. These high levels of output are projected to continue for 2015; according to the USDA, global soybean production for the year 2015 is projected at a record 314.4 million tons, up 1.6 million tons from gains in production from Brazil and the United States.¹

![Prices Received for Soybeans by Month – United States](http://agfax.com/2014/11/28/keith-good-corn-soybean-prices-slightly-november-usda/)

Price projections for 2015 are thus largely negative, with the general consensus among forecasters appearing to be further minor price declines in the first half of the year with prices stabilizing just below their current levels in the medium term at around $9 or $10 US a bushel.²

2. The value of the Cidi: The significant depreciation of the Ghana Cidi in 2014 (the currency lost about 40 percent of its value by the third quarter³) lent a boost to domestic producers of soybeans, as the cost of imported soy products rose substantially for domestic buyers. However, the falling global price in soybeans mentioned earlier offset some of this effect.

The stabilization of the Cidi that was seen in late 2014 is expected to continue in 2015 as the issuance of a $1 billion Eurobond loan from the IMF and a $1.7 billion loan to the Cocoa Board have injected much needed foreign exchange reserves, helping to restore confidence in the currency.

However, the long term outlook for a stable Cidi is in doubt as the government’s fiscal position is still in need of adjustment with budget deficits projected at around 9 percent of GDP. With an election approaching in 2016, the government’s ability to reign in spending and consolidate its fiscal position is in question. Further devaluations of the Cidi in the medium term remain a possibility as a result.

Further devaluations of the Cidi would have varying effects on the different actors in the soy value chain. On the one hand, a depreciation will improve the relative price competitiveness of domestically produced vis a vis imported soy on the domestic market. On the other hand, a devalued currency will increase the cost of imported goods, which are important inputs for many actors, from fertilizer, pesticide and herbicides, to capital goods such as threshers and the machinery used by processors and other high end market users.

3. Exports: The large depreciation of the Ghana Cidi last year would have helped the competitiveness of Ghanaian exports on international markets – among them soy. However it is unlikely that this opportunity would have been realized by those in a position to export soy or its end products for two reasons. First, a significant part of the soybeans used by the few larger firms in Ghana with potential to export are themselves imported (as are the capital goods that any smaller firm would need to acquire in order to achieve the economies of scale and quantities required to export) muting the ability of Ghanaian firms to increase their exports.

Secondly, the large unmet domestic demand and relative increase in prices of imported soy would increase domestic demand for domestically produced soybeans leaving little left for exporting. It is especially due to this second reason that it is unlikely that exports of Ghanaian produced soybean will see increases in the future.

This was borne out in our interview with Ghana Nuts, the largest processing company in the country and in best position to export. They reported only small exports to neighbouring ECOWAS countries (mostly Ivory Coast), saying that their ability to export more was hampered by a low supply of soybeans and high domestic demand.

4. Imports: Aside from the largest processor – Ghana Nuts – none of the processing companies reported importing raw soybeans for processing. This is due to the large volumes required when importing.

Therefore, the majority of Ghana’s soy imports come in the form of imported soy cake to be used as feed by the poultry sector, and to a lesser extent oil, not in the raw bean form.

It was reported to us that several of the larger mid-size processors (Vestor Oils, Golden Web) were preparing to pool their resources and import raw soybeans in 2014 due to the scarcity of soy beans on the domestic market. However, one of the companies ran into financial difficulties and could not participate, meaning the group did could not buy the large volume that is required when importing.

If in the future, groups of processors are able to pool their resources and achieve the economies of scale necessary to import, this would represent a huge loss of demand for Ghana’s soy producers, as it is likely that the amount imported would satisfy many of these firms demand for an entire year of production.

**National markets: raw soybeans**

1. The link to national end markets - processors: The higher value markets for soy in Ghana go through the country’s processors, which are concentrated in the Ashanti and Brong-Ahafo regions. From our interviews it was reported to us that there is no shortage of processors, with around 10 mid-sized processors (those with a capacity of around 15-30 tonnes per day) and many more small operations in Kumasi alone. Ghana Nuts, the largest, reported processing around 110MT per day last year (or around 36,000MT annually).

Strong demand from the poultry sector and high potential margins have attracted many small processors to enter the market. For example, Kingsworth processor indicated at the time of interviewing (February 2015) that they were selling 50 kg bags of the processed soy cake to poultry farmers and retailers at GHC 120 and had been buying 100 kg bags of raw soybeans at between GHC118 and GHC130 between September and December. However, the capricious supply of domestic soy beans, large seasonal price fluctuations, the high cost of the necessary machinery, and inefficiencies and poor management has led a number of these new entrants in the market to fail.

A potential change from the 2012 report is that there appears to have been considerable growth in the number of processors catering to the soy market in recent years. Our interviews with processors, Kingsworth, Golden Web, and Ghana Nuts indicate that there are many processors purchasing soy in order to supply the poultry sector.

2. Urban and rural open air markets: These markets often are the destination for smaller producers who bring raw beans to sell with little value added. Evidence gathered from our interviews suggests that there is a lack of small scale aggregation at the village level. Some mid-size aggregators and nucleus farmers reported that they were unable to access all the soy crop produced in their districts due to the small production amounts of many of the farms and the high transaction costs and logistics required to gather. As a result, many of these small farmers do not have access to higher value markets for their crops.

Local market women sell soybeans in quantities of a ‘bowl’ which is roughly 2.5kg. The soy is sold for consumption as there are a few local dishes that use soybeans such as tom brown or kebab.

From the interviews with small scale farmers and aggregators at the village level, we were told of very wide price swings in the local markets. One aggregator in Pina reported a low of GHC160 per maxi bag, up to about GHC270 per maxi bag during the lean months of July-September. Immediate demand for cash and the need to repay loans is likely to limit some farmer’s ability to store for long periods.
National markets: processed soybeans

3. The poultry sector: The significance of the poultry sector as a major consumer of Ghana’s domestically produced soybean crop is still paramount among end consumers. From speaking with processors, it was communicated that many small and medium sized poultry operations often do not have access to imported feed due to the higher costs – opting instead for the lower quality and lower priced domestically produced feeds.

However, because the protein content of these lower quality feeds is often less as well, it likely contains a lower component of the more expensive soy cake, and higher amounts of cheaper ingredients such as corn meal. This is not universal among domestically produced feed though, just among some cheaper domestic varieties.

The majority of the soy cake produced by the country’s processors (which aside from a portion of Ghana Nuts’ supply is entirely domestically sourced) is consumed by large and medium sized poultry operators. It is these larger poultry operators which also consume imported feed, which puts the domestically produced feed in direct competition with imported feeds.

There is a preference among consumers in Ghana for imported feed instead of domestically produced feed. Domestic producers therefore have to keep their prices marginally lower than similar imported feed in order to be competitive on the market. This appears to be general and widely held preference amongst all consumers in Ghana, who view domestically produced products as being of inferior quality and even a degree of cynicism. It is unlikely that domestic producers of feed could compete with imports on more than cost.

4. Industry: The principal soybean product consumed by industrial end users is the oil – which is 14-18 percent of the output from processing soy beans into the cake. The overall demand from industry in Ghana on soybeans and its by-products is small compared to the poultry sector.

Azar paints is the largest industrial buyer of soybean products among chemical and paint companies and consumes around 80 tonnes of soybean oil per month. There is a small steel sector that also uses crude soy oil, although no connections between domestic millers and the steel sector were uncovered.

For processors, the money is in producing soy cake for the poultry sector. Processors won’t produce to get the oil alone; their production is driven by demand for the cake, not the demand for oil. As such, sourcing domestic oil can be an issue for these companies.

Azar paints used to import their oil. However, the oil operations manager informed us that he wants to see Ghanaian businesses do well, and tries to buy from domestic soy processors when possible. He reported that since he joined the company in 2008, they have only imported once. However, the company reported that they were preparing to import again due to a shortage of domestic supply at the time of interviewing. When Azar does take the decision to import, it is in large amounts that will last them several months of production.
There are two types of soy oil, unrefined or crude oil and refined oil. It was reported to us that of the industrial end users of oil only Azar buys both, as they have oil refining equipment and can process the crude oil into refined oil for use.

For paint manufacturing, sunflower oil can serve as a substitute for the soybean oil. Azar buys sunflower and soybean oil, but reported that there was no sunflower oil in their system at the time of interviewing.

5. **Supermarkets:** The major soy product that reaches the larger supermarkets and chains is cooking oil. Of the cooking oil sold in Ghana, the majority is imported. Ghana Nuts packages and sells its oil under the name Akuma Oil, which is only sold domestically. Vester Oils reported that they have plans to invest in a refinery to be able to process the crude soybean oil into cooking oil, which will give them an opportunity to supply the domestic market. Vester Oils reported that it was only Ghana Nuts that is producing cooking oil from soybeans, and no other processors reported supplying refined cooking oil.

### Summary of soy end markets

<table>
<thead>
<tr>
<th>Market</th>
<th>Size</th>
<th>Growth Opportunities</th>
<th>Barriers to Entry by Target Producers</th>
<th>Best options for MEDA clients</th>
<th>Form of soybean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Export</td>
<td>Small</td>
<td>Low</td>
<td>Economies of scale</td>
<td>None</td>
<td>Oil</td>
</tr>
<tr>
<td>Poultry sector</td>
<td>Large</td>
<td>Medium to high</td>
<td>Competition from imports, quality, volumes for larger operations</td>
<td>Improve efficiency of production, aggregation</td>
<td>Cake</td>
</tr>
<tr>
<td>Supermarkets</td>
<td>Small</td>
<td>Medium to high</td>
<td>Competition from imports, quality, market linkages</td>
<td>Financing for processors to refine oil</td>
<td>Oil</td>
</tr>
<tr>
<td>Industry</td>
<td>Small</td>
<td>Low</td>
<td>Competition from imports, market linkages</td>
<td>Financing for processors to refine oil</td>
<td>Oil</td>
</tr>
<tr>
<td>Local markets</td>
<td>Small to medium</td>
<td>Low</td>
<td>None</td>
<td>Improve efficiency of production, aggregation</td>
<td>Raw bean</td>
</tr>
</tbody>
</table>

### 3.2 Enabling Environment

#### Government Interventions

1. **Fertilizer subsidy:** The government announced in December 2014 that it will not pay fertilizer companies for the subsidized inputs they provided in 2013. This effectively spells the end of the
fertilizer subsidy program, as fertilizer companies have said they will not continue selling at the subsidized price without payment from the government.

This may have some benefit to soy producers, as was reported in the 2012 Value Chain Analysis, the most effective fertilizer for soy, TSP, was not included in the subsidy meaning that few farmers opted to buy it when faced with much cheaper subsidized varieties, and few input suppliers carried it. It is likely that without this price distortion, the true demand among the various fertilizers will become apparent and their supply going forward should adjust to that.

2. Power outages: The intermittency of power has negatively affected processors. It was reported to us by an aggregator in Tamale that the price of soybeans there had recently dropped to GHC110-120 from GHC160-170 because processors had not been able to go through their stocks due to power disruptions, and were thus not buying as much soy because of their slower rates of production. There could also be other factors contributing to this, such as more farmers bringing their stored crops to market, or disruptions in the poultry sector from the recent poultry import ban due to cases of bird flu from some EU countries.

3. National Food Buffer Stock Company (NAFCO): This government organ is to act as a price backstop for farmers when prices drop too low. NAFCO has seen its budget cut and hasn’t been able to buy the quantities stipulated under its mandate. However, given the robust prices for soy, it is unlikely that NAFCO would have intervened in the market to purchase this crop, or will do so in the future.

**Seed Supply Chain**

1. Research institutions: The Savana Agriculture Research Initiative (SARI) is responsible for creating and testing new seed varieties suitable for growth in Ghana’s three northern regions. Although newer varieties have been developed, Jenguma is still by far, the preferred variety. SARI estimated that close to 90% of certified seed is Jenguma. Newer varieties have varying balances of maturity and shattering, but unless one can accurately predict rainfall and opt for a shorter or longer maturing seed accordingly, Jenguma is still the best variety for planting.

SARI reported that they are reluctant to produce more breeder seed because they are unsure if the seed companies will buy it all. SARI reported that seed companies don’t plan ahead and don’t inform them of what varieties and quantities of breeder seed they will want for the upcoming season. Given that soy is a relatively new crop, the acreages planted are likely varying from year more than other traditional, or more established crops such as maize. As soy becomes a more established crop, these mismatches in supply and demand in the various parts of the soy value chain should decrease over time.

2. Foundation seed providers: with the introduction of the Plants and Fertilizer Act (Act 803) in 2010, the provisioning of foundation seed was expanded to the private sector. Previously, SARI only provided breeder seed to the Ghana Grains and Legumes Board (GGLB) which multiplied the breeder into foundation seed to be distributed to the certified seed growers. However, now SARI
can and does sell the breeder seed to private seed companies in addition to the GGLB. Additionally, sometimes SARI will also produce foundation seed itself when it has the resources to do so.

3. Certified seed growers: The foundation seed is then sold to certified seed growers – farmers who have registered as such. The process for a farmer to become a certified seed grower requires inspections of the farmer’s methods to ensure no cross contamination takes place, a letter of endorsement from the district MOFA director, and a year of probation.

Once the certified seeds are grown, the farmer must take them to regional inspection facilities. In the Upper West region, this is done at the Seed Producers Association warehouse in Wa. Our interview informants at the Association estimated that around 600 acres were dedicated to producing certified soy seed in the region, with each acre producing around 5 or 6 100kg bags – a total of 3,000-3,600 maxi bags. From our interviews it appeared that most seed growers were not able to meet the demand for certified soy seed. Importing seed into the country is not easy. Practically all of the seed on the market is grown domestically through this supply chain. When farmers do not access certified seed, they frequently will harvest the seed from the previous year’s crop, which results in lower yields.

Related Markets

1. Seed supply chain: Act 803 opened up the certified seed supply chain to the private sector by allowing private seed companies to grow foundation seed for distribution to the certified seed growers. Previously this was only done by the Grains and Legumes Board. Additionally, private seed companies can now research and breed their own seed varieties, however, according to SARI, none have yet done so.

A bill currently before parliament would extend patent protection to seed companies that develop their own varieties. However, there is significant opposition to this bill among small holder farmers, the Seed Producers Association and others concerned that this will be a back door to allow GM varieties into the country, which some argue will harm Ghana’s domestically produced seeds.

2. Input supply: In attempt to incentivize and build the capacity of input dealers to increase outreach to small holder farmers, conscious effort is being made in training and certification of 2,048 input dealers in support of Farmer-focused Input Delivery System across the ten regions of Ghana through the Ghana Agro Dealer Development Program in collaboration with IFDC (MoFA-Update on AGRA Programs and Grants in Ghana).

Inoculants are a low cost fertilizer that small holder farmers – especially women – can afford but is not accessible due to delays in importation. In our interaction with SARI, it came out that a test has been conducted on inoculant but the result is not conclusive because the soil influences the outcome. SARI is working on a plant that is to produce artificial inoculants.
3.3 Gender

Gender is an integral part of any project that seeks to address poverty and hunger and for this reason, gender is at the heart of MEDA projects. In 2012 a thorough gender analysis was carried out by MEDA in Ghana especially in the Upper West Region and three years of implementation it is prudent to take a retrospective look at the gender issues and some evolvements in the soya sector. It is equally important to note that at every stage of the value chain, women are making significant impacts.

MEDA’s gender strategies over the period under review has had some impacts on the soya value chain taken into cognisance some critical aspect of the value chain.

Producers/farmers

The soya value chain revolves around the production base and it is important to acknowledge that women are the majority at the production level now especially in the Upper West Region.

It is refreshing to know that over the last two years women’s efforts are recognized, appreciated and rewarded. Women have won awards as District and Regional Best Soybeans Farmers in the Upper West Region in the Farmer’s Day organized by MoFA-2014. Women’s contribution to the economic development of their families, communities and the nation has been recognized.

Even though women are confronted with some challenges of access to fertile land, access to credit, decision making, access to improved inputs, access to extension services just to mention but a few. There have been some marginal improvements over the last few years. This was evident during MEDA’s GROW FAIR when traditional leaders, opinion leaders and husbands pledged to support women in their quest to support the economic development of their families, communities and the nation at large.

Some women have purchased threshers even though in the names of their husbands but that tells the kind of giant strives made by women in the soya industry.

Marketing/Entrepreneurs

Marketing has been the noble ‘profession’ of women in Ghana and the soya value chain is no exception. Women are now seen as aggregators who sometimes aggregate and sell to their male counterparts aggregators who also intend sell to the processors. In an interview with an urban aggregator (Issah Alhassan) in Tamale, he said those mopping up soya at the village level and selling to them are mostly women. Women also dominate the retailing level of the soya value chain. It is quite revealing knowing from Mr. Augustine, the Operations Manager of Kingsworth Industries that women come to processors to buy crude oil and refine it in their own local way into edible oil for both sale and consumption and this tells how ingenious and innovative women are in the value chain.

Women with entrepreneurial skills are being identified and encouraged to venture into the male dominated areas in the value chain such as input supplies as sales agents at the community level to make inputs more accessible to women farmers.

Apart from the fact that many women are soya farmers in their own right, many are also employed at the various levels of the value chain. Commercial farmers engage women to plant, harvest and winnow their soya for them. Some aggregators and processors also engage women to do grains cleaning for quality beans. In an interview with Mr. Job, the procurement officer at Ghana Nuts said women are entrusted with the responsibility of sales because of their reliability. At Vester Oil Mills one the biggest
processing companies, a woman is the General Manager and tells the important positions women occupy in the value chain.

**CONTRAINTS**

Women farmers are saddled with some challenges in the soya value chain.

Access to fertile and productive land continues to be a challenge. Traditionally, women don’t own land in the northern region and would have to depend on their husbands and family heads for land and these men will only release land they have cultivated for years to women. There is twist to this assertion, it has come up that fertile or virgin lands are far away so allocating such lands to women would also mean adding more work load to them since they would have to trek long distances and considering their morning and evening chores. Another reason was on the security of these women since all farmers are under the threat of conflict, petty theft and destruction of farms by Fulani herdsmen.

Limited access to finance. Due to the cumbersome nature of accessing credit from FIs, women are always scared from credit and sometimes terms and conditions are not favourable to women, talking about collateral and high interest rate. Women aggregators tend to do little due to limited funds even though they have the desire to do more of the aggregation.

Limited access to appropriate technologies such as tractor and thresher services. Instead of seeing both men and women as potential business clients, the providers of these services always finish with the men before servicing the women and this sometimes affects the yields of women farmers because of late planting.

Also, limited access to improved inputs is a constraint faced by women. Women in the north mostly depends on their husbands to access inputs and sometimes their husbands will buy what they think is good, which probably might be inferior due to imitations. Apart from the fact that inputs are not accessible at the village level, it stem from the dogmatic premise that women at their reproductive stage should not handle agro chemicals.

### 3.4 Environment

The exponential population increase in recent years has increased the practice of agricultural land conversion to meet demand for food which in turn has increased the effects on the environment. Due to the global increasing demands for soybeans and agriculture generally, the world’s forests are being cleared for agricultural purposes. The usage of chemical fertilizers, insecticides and herbicides to increase production pollutes the air, soil and water with toxic chemicals. Removing of trees and plants to increase areas of cultivation causes habitat loss and threatens the survival of numerous species of animals and plants.

Burning of fossil fuels and toxic gases produced in processing companies cause pollution. Air pollution affects the environment and threatens the health of all who inhabit the earth.

Some other activities of human beings have had a significant impact on the environment. In many communities these days illegal mining (Galamsey) is gradually taking away arable lands for agriculture.
This phenomenon is becoming common in the northern regions of Ghana where soybeans are cultivated more.

Also, the felling of trees especially economic trees like shea for charcoal burning is adversely affecting the environment and subsequently leading to climate change. As a result of climate change, the soybean industry is affected by poor yields due to erratic rainfall.

### 3.5 Support Markets

**Extension services**

The extension service unit of MoFA in Upper West is currently challenged with limited Extension Agents. There are 250 operational areas to be manned by 250 extension agent across the region. However, the available agents are 65 leaving a deficit of 185 agents and this is affecting service delivery and productivity. This challenge is as a result of non-replacement of retired and deceased staff since 2010. Ideally, an extension agent is entitled to one operational area which is made up of at least eight communities.

As a result, some development organizations now use the Farmer Based Organizations which are more organized farmer groups as a platform to discuss their technology and these groups are found more in the northern regions.

MoFA is also using Farmer-Field School, Demos and the radio as a medium of sending extension services. With support from Voluntary Service Overseas, MoFA is using married women in communities where there are no Extension Agents as Women Extension Volunteers. These women are trained and given talking books, an innovative low-cost audio computers which are uploaded with information from site selection to marketing in local languages which are listened to by farmers at their convenient time. As Volunteers they are given bicycles, rubber boots, note books as motivational packages and they are given periodic refresher trainings.

In collaboration with West Africa Agricultural Productivity Program, MoFA is piloting the e-extension model where farmers are given smart phones with Agric information Apps, farmers can access information on crops, crop varieties, crop calendar, GAPs, market information etc.

Government is now commercializing the extension service by registering private extension service providers to also take up extension service delivery which will attract a fee if farmers engage their services.

**ICT**

Information, communication and technology are indispensable in development and in attempt to develop the soy value chain, CT is key.

In empowering the small holder farmer, it is important market information especially pricing are made available to the small holder farmer to enable a good price negotiation. MoFA over the years has been
sending weekly price information from various markets via radio but for some time now these information are not more aired especially in the Upper West because MoFA was being supported by Plan Ghana to carry out this important activity and Plan Ghana has withdrawn its support making it difficult for MoFA to continue with this activity.

Some private companies have made incursions in to this area of information delivery to small holder farmers and among them are Farmerline, Talking Book, Esoko and Mfarms.

Farmerline (www.farmerline.org) is the latest company to join the information service delivery for small holder farmers. They send voice messages to small holder farmers via mobile phones in the local languages. Some of the messages includes, weather information, GAPs, harvest and post-harvest management, financial tips, Market information etc. MEDA has contracted Farmerline last year to send messages to its Lead Farmers who receive these messages and share with their group members and according to farmers it has help increase their yields.

Literacy Bridge (www.litercybridge.org) is also another organization that give information to all kinds of people especially the illiterate and poor. They use the Talking Book and messages are uploaded unto these devices for beneficiaries to play and listen at their own convenient time. These messages cut across all segments of life, agriculture, health, education etc. With GROW, farmers listen to the Talking Book after their VSLA meetings and the device is routinely passed on from one household to another of the group.

Esoko (www.esoko.com) is a private company which delivers critical crop messages about diseases, weather, climate adaptation, post-harvest management and more. After listening to the feedbacks of farmers, Esoko is launching Esoko 2.0, the most powerful platform for communicating with farmers.

mFarms (www.mfarms.org) is also offering similar services over mobile technology as Esoko. They also send text and voice messages actors on the following modules; Farmer/FBO management, Extension services and monitoring, Agro-input dealers management, Crop production estimation and Farmer input demand pool.

**Technology**

Technology is the catalyst for development in this 21st century and indeed agriculture would need the appropriate technologies to yield the desire results and we focus the lens on the soybean value chain as our area of interest and priority.

Threshing of soya has been the main challenge of farmers over the years and this even scare some people away from soya cultivation but this is being tackled frontally by ATT and ADVANCE with their grant packages that enabled some nucleus farmers (farmers who are considered a bit advanced in agriculture and has farmer groups under them) to purchase multi-purpose threshers last year imported by Agromite. The grant is a 70%:30%, where 70% of the cost of the thresher is paid by ATT/ADVANCE and 30% by the beneficiary. In an interview with Mr. Michael of Acdep, he said ADVANCE gives grant packages to their nucleus farmers to make them efficient and effective to able to serve their out growers well to improve on productivity, yield and quality of beans.
Agromite, the importer of these machineries is also considering the importation of simple planters and harvesters even though ATT brought in some grant planters which were demonstrated last year by farmers.

**Finance**

Financial Institutions in Ghana are regulated and monitored by the Bank of Ghana. In dealing with inflation and depreciation, BoG set a base rate and as at February 2015 it was 23.8% which they review periodically. It is this base rate that informs the interest rate of various banks.

The financial sector of Ghana characterized by Commercial Banks, Rural Banks, Micro Finance and Credit Unions. The products these FIs offer are; personal and commercial loans, over draft, fixed deposit, savings and current accounts, agricultural loans etc. Agriculture Development Bank which is seen as a dedicated bank to agriculture sometimes shun away from agriculture financing. Most of the banks are interested in giving loans to the formal sector which makes recovery easy for them.

All value actors are confronted with some financial challenges. Farmers are confronted with limited access to finance and this is as a result of high interest rate, stiff terms and conditions and farmers not holding accounts with the financial institutions. Farmers not keeping records is a limiting factor. In some cases farmers are asked to do down payments before credit is advanced to them.

Processors, aggregators and input suppliers are saddled with some constraints in accessing credit. Financial Institutions demands from these actors collateral and sometimes leases of properties before credit are advanced to them and this poses a big challenge because it is not that common with Ghanaians to lease their property.

### 3.6 Value Chain Map

- **Village market**
  - **Retailers**
  - **Small/medium processors** [100kg cost btw GHC118-130 Sept-Dec 2014] [sells 50kg bag of feed to poultry farmers at GHC120*]
- **Large urban markets**
  - **Retailers**
  - **Wholesalers/distributors**
- **Poultry sector** [2012 demand 85-112000 MT of soy, with 45000MT domestically supplied]
- **Industrial uses/paint mfg** [Azar uses 80 tonnes crude oil/mo]
- **Exports**
  - **Imports** [soymeal cake GHC140-160 for 50 kg] [raw beans ~GHC200 for 100 kg]
- **Large processors** [buying price for 100kg soybeans in 2013/14 ~ GHC150 with large fluctuations] [GW demands 1700 MT annually] [GN buys ~34000 MT of which 20000 is domestic]
Small traders/village aggregators [margin~GHC 0.5 – 1, VOL~1mxbag-20 per week] [buys 100kg for 200GHC*]

Certified seed growers [for Sept 45kg of seed reported at GHC140, F. Nuhu reported GHC240*, Macadams 180, seed PAG reports GHC120]

Grains and legumes board [sells 50 kg of foundation seed for 400]

Breeder stations [SARI sold 50kg of breeder seed for GHC200]

Farm household consumption

Farmers [sells 100kg btw ^GHC160-260]

Sales agents

Input supply shops

Large aggregators [selling 100 kg bag for GHC180*, buying at GHC140*]

Distributors

Large importers of inputs

SUPPORT SERVICES
- Equip manufacturers
- Gov’t institutions
- NGOs/partners
- ICT [Farmerline subscription for 1 year costs 50 cidis]
- Transport services
- MOFA/WIAD
- Import/export delivery services
- Financial institutions
- Threshing/plowing services [margin ~5%]

Price discrepancies could be due to differences in buyers and sellers; VC actors at one part of the chain selling to different actors than those quoted in another part. For example, a farmer says they are selling their soy at x price could be quoting prices they get selling small amounts at the local market - whereas aggregators quote a different price due to the volumes involved. Also, although dates were gathered as well as possible, there could be time discrepancies that went unnoticed - i.e. respondents quoting prices at varying times and not noting the temporal difference to the interviewers. Lastly, incorrect figures could have been given; the figures reported were from respondent’s recall during the time of interview.
3.7 Business Model

The growing demand for soybeans globally has made the soybeans sub sector a very lucrative business with a large and growing market. Indirectly almost everyone consumes some amount of soybeans through meat, cheese, eggs, oil or milk – as it is used as animal feed, processed consumption good or simply as a consumption bean.

According to MOFA the average yields of soybeans currently is 0.8MT per hectare although soybean production among globally competitive producers is in the range of 2.74MT.\(^5\)

The insufficient domestic production of soybeans due to poor yields, causes shortage of soybeans in the country. Therefore reliance of the poultry sector on feed imports is projected to grow from 73,000MT in 2010 to 118,100MT in 2015.

Ghana’s imports of soybean oil alone was 2,700MT and 7,826MT annually between the period 2001 and 2007. The oil that is processed in Ghana is not enough to feed up to 30% of its population. This low yields of soybeans prevents processing companies to process soybeans throughout the year. Soybeans processing companies function more effectively during the periods of harvest that is from December to March. After the month of March there appears to be a shortage of soybeans in the entire country and so most processing companies are forced to either shut down or divert into processing other products.

Soybeans as a crop has comparative advantage over other crops in Ghana due to the following

- Highly reliable and ready market for soybeans when compared with other crops
- Soybeans has a higher market price value than other traditional farm crops
- Due to its limited usage of fertilizer, its production cost is lower than other farm crops
- It is environmentally friendly due to its nitrogen fixing properties which replenishes the fertility of the soil
- There is no waste product with soybeans in the sense that most of its bi-products are used for several things such as poultry feed, animal feed, composting etc

\(^5\) Approximate average yield range for Argentina, Brazil, and the United States.
4.0  Strengths and Constraints Tree
Inefficiencies in the soy value chain

Price instability

- Poverty and demand for immediate cash
- One growing season
- Seasonality of selling
- Lack of irrigation
- High expenditures during certain times
- Lack of resources/credit
- Poor knowledge of storage methods
- Poor mgmt of existing infrastructure
- Lack of ownership
- Lack of resources/credit
- Lacking comms. technology

Unavailability of storage facilities

- Poor comm btw VC actors
- High cost in accessing mrkt info
- Domestic economic situation
- Banks are risk averse
- Buraucratic
- Lack of collateral
- Lack of knowlege of soy market by FIs
- Low yields/low income
- Poor financial knowlege
- Poor record keeping

Lack of market information

- Ag sector is high risk
- Untimely/slow disbursement of credit

Lack of finance

- Low yields/low income
- Poor financial knowlege
- Poor record keeping

High interest rates

- Cumbersome application process
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Cumbersome application process

- Ag sector is high risk
- Untimely/slow disbursement of credit

Lack of access to finance

- Low yields/low income
- Poor financial knowlege
- Poor record keeping
Inefficiencies in the soy value chain

- Low productivity
  - Inefficient operation
    - Requires different parts
  - High cost
  - Few available
  - Women access second

- Low access to inputs
  - Late access to input dealers
  - Untimely delivery of inputs
  - Poor access to inputs, low income

- Gender barriers
  - Lack of access to inputs dealers

- Limited access to farm inputs
  - Gender barriers
  - Use of inferior inputs
  - Low knowledge of GAPs

- Poor access to finance, low income
  - Lack of access to extension agents/offices
  - Low adoption culture

- Gender imbalance
  - Gender barriers

- Low knowlege of GAPs
  - Low access to extension agents/offices
  - Low adoption culture

- Low access to inputs
  - Limited access to farm inputs
  - Gender barriers

- Poor access to finance, low income
  - Limited access to farm inputs
  - Gender barriers

- Remote location
  - Poor transport network

- Use of inferior inputs
  - Low knowledge of GAPs
  - Poor access to finance, low income

- Lack of input dealers
  - Use of inferior inputs
  - Low knowledge of GAPs

- Low trust in efficacy of higher cost inputs
  - Use of inferior inputs
  - Low knowledge of GAPs

- Use of inferior inputs
  - Low knowledge of GAPs

- Lack of access to finance, low income
  - Use of inferior inputs
  - Low knowledge of GAPs

- Poor soil management practices
  - Lack of input dealers

- Erratic rainfall
  - Climate change

- Climate change

- Monopoly in distribution of breeder, found seed
  - Inefficient seed certification process
  - Inefficient seed certification process

- Climate change

- Low access to appropriate technology

- Few skilled operators

- Low adoption culture

- Farmers are risk averse

- Inadequate access to certified seed

- High cost of seeds

- Low seed production

- Low seed production

- Large size of acreage

- Land allocation

- Gender imbalance
## 5.0 Solutions Table

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>SOLUTION</th>
<th>WHO DOES</th>
<th>WHO PAYS</th>
</tr>
</thead>
</table>
| • Limited access to inputs           | • Promote a two way feedback market linkage between agricultural research institutions, seed growers and farmers on the production demands of seed for every season | • Seed growers  
• Breeder stations  
• Agric research institutions  
• Framers | • Farmers                             |
| • Facilitate early planning between VC actors and to promote possible value chain financing arrangement models between actors | • VCA                                                                      | • VCA                                                                      |
| • Education on the benefits of accessible and timely delivery of inputs to farmers | • Input Suppliers  
• MEDA/KFP                                                                     | • Farmers                                                                  |
| • Facilitate a bottom-up effective communication flow between value chain actors | • VCA  
• Farmer line  
• Esoko  
• Talking book                                                             | • VCA                                                                      |
| • Input accessibility at the community level through the engagement of community sales outlets and agents | • Input suppliers  
• Sales agents                                                        | • Farmers                                                                  |
| • Price instability                   | • Provision of extension education to farmers on Good Agricultural Practices to increase productivity | • MOFA  
• MEDA/KFP                                                               | • Processor  
• MOFA  
• Farmer |
| • Establishment of storage facilities to enable farmers store their produce for a long period | • NGOs  
• MOFA  
• Processors                                                            | • Farmers/Cost sharing  
• Processors                                                             |
| • Flow of market information among VCA to build the capacity of farmers to confidently negotiate for prices | • VCA  
• Processors                                                            | • VCA                                                                      |
| • Development of MOUs and signing of Contract among actors to promote trust and transparency | • VCA                                                                      | • VCA                                                                      |
| • Limited access to Finance          | • Facilitate financial institutions understanding and appreciation of the market opportunities of the soya subsector to reduce | • Financial Institutions  
• VCA                                                                     | • VCA                                                                      |
the risk element of the agricultural sector

- Usage of proper records keeping by VCA to aid them in accessing finance
  - VCA
  - Financial Institution
  - VCA

- Promote flexible processes for loan access and repayment
  - Financial Institution
  - VCA

- Low productivity
  - Promote the use of improved inputs
    - Farmers
    - MEDA/KFP
    - Input Suppliers

- Training of farmers on GAPs and setting up of demonstration sites for easy adaptation
  - MOFA
  - MEDA/KFP
  - Input suppliers
  - Farmers

- Facilitate the access and availability of extension services to farmers
  - MOFA
  - MEDA/KFP
  - Farmers
  - MOFA

- Establishment of pilot irrigation facilities at the community level to demonstrate all-year farming to generate interest from VCA
  - NGOs, Private sector

- Promote the use of appropriate technology and equipment
  - Equipment manufacturers and providers
  - Research Institutions
  - NGO
  - Farmers

### 6.0 Interventions Table – Current undertakings

<table>
<thead>
<tr>
<th>SOLUTION</th>
<th>INTERVENTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Facilitate effective communication and early planning among VCA</td>
<td>• Training of farmers on early crop budgeting to enable other value chain actors know the production demands of farmers</td>
</tr>
<tr>
<td></td>
<td>• Promote both bottom-up and top-down market flow of information between VCA</td>
</tr>
</tbody>
</table>
| Accessibility and availability of extension services on Good Agronomic Practices to female farmers | Facilitate the Training of farmers on GAPs by extension agents  
Establishment of demo plots to promote easy adoption of new farm practices  
Facilitate access to reliable weather information by ICT service providers to farmers  
Pilot the establishment and usage of irrigation facilities  
Training of farmers on alternative ways of production such as CA, composting, etc to reduce their production cost  
Carry out gender sensitization at the community level, for the release of fertile lands especially to women farmers |
| --- | --- |
| Promotion of the Female Sales Agent model | Identification and training of some lead farmers or other women that have entrepreneurial skills to become sales agents at the community level  
Build capacity of female sales agents to take advantage of business and market opportunities in soybeans subsector  
Build the capacity of Women on negotiation skills, business skills, financial management, etc so as they can act as community aggregators/sales agents/input suppliers as relevant |

### 6.1 Interventions Table – Proposed undertakings

| Pilot contract agreement between VCA | Pilot a platform for the interested parties to interact and negotiate on price and other conditions of service  
Pilot with one processor and one farmer group  
Development and signing of MOUs between actors  
Sensitization on the importance of fulfilling the contract agreement and how it promotes trust and transparency among VCA |
| --- | --- |
• Piloting of storage facilities model to enhance village level access to storage and aggregation

• Identify gaps in storage and whether this is an issue at the community levels
• Identification of existing storage facilities at community level
• Identify why existing storage not currently being used
• If appropriate, pilot commercially sustainable storage models

• Facilitate Financial institutions to understand and appreciate the market opportunities in the soya subsector

• Financial Institution undertake a detailed market assessment on the profitability of the soya subsector
• Train VCAs on proper records keeping to aid them in accessing credit from the financial institutions
• Facilitate financial institutions to develop and design more attractive and lower interest rates agricultural lending packages for VCA
• Encourage early planning among VCA to avoid late disbursement of finance

ADDITIONAL PROGRAMMING NOTE

It has been noted by the project to date that linking the large processors in the southern region directly with women farmer groups in the north has been difficult—in terms of communication, understanding and product flows. The gap between the two may be too large and important market actors in between may be missing. Refocusing on strengthening intermediaries such as the female sales agents and aggregators may be a feasible solution to this issue.

CONCLUSION

In conclusion, the soy market has not drastically changed since the last Value Chain analysis was carried out in 2012. Soy still represents a significant opportunity with more demand than supply. The poultry sector is growing with a corresponding growth opportunity in soy. The low productivity and lack of supply in Ghana can also represent a risk if the processors decide to import soy rather than buy locally. Projects such as GROW and other development projects focused on soy will hopefully be able to positively impact this imbalance for the benefit of all market players, particularly small farmers. The GROW project is still well positioned to achieve positive outcomes for women in the Upper West region of Ghana through a focus on soy.
Annex

Table 1: Measures

<table>
<thead>
<tr>
<th>Common name</th>
<th>measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maxi bag</td>
<td>100kg</td>
</tr>
<tr>
<td>Mini bag</td>
<td>50kg</td>
</tr>
<tr>
<td>Bowl</td>
<td>2.5kg</td>
</tr>
</tbody>
</table>

Table 2: List of interviews

<table>
<thead>
<tr>
<th>Type of actor</th>
<th>Organization, individual</th>
<th>Location</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment supplier</td>
<td>Agromite, Dr. Anim-Somuah</td>
<td>Accra</td>
<td>February 3rd, 2015</td>
</tr>
<tr>
<td>Industrial end consumer</td>
<td>Azar Paints</td>
<td>Accra</td>
<td>February 3rd, 2015</td>
</tr>
<tr>
<td>Processor</td>
<td>Vestor Oils</td>
<td>Kumasi</td>
<td>February 4th, 2015</td>
</tr>
<tr>
<td>Seed promoter/regulator</td>
<td>Grains and Legumes Development Board (GLDB), Mr. Korley</td>
<td>Kumasi</td>
<td>February 4th, 2015</td>
</tr>
<tr>
<td>Processor</td>
<td>Kingsworth Industry, Mr. Augustine</td>
<td>Kumasi</td>
<td>February 5th, 2015</td>
</tr>
<tr>
<td>Poultry end consumer</td>
<td>Jordan Jubilee Farms</td>
<td>Kumasi</td>
<td>February 5th, 2015</td>
</tr>
<tr>
<td>ICT provider</td>
<td>Farmerline</td>
<td>Kumasi</td>
<td>February 5th, 2015</td>
</tr>
<tr>
<td>Processor, exporter</td>
<td>Ghana Nuts, Mr. Job</td>
<td>Techiman</td>
<td>February 6th, 2015</td>
</tr>
<tr>
<td>Research institution</td>
<td>Savanna Agriculture Research Initiative (SARI), Dr. Denwar</td>
<td>Tamale</td>
<td>February 26th, 2015</td>
</tr>
<tr>
<td>Aggregator, commercial farmer, seed grower, thresher/tractor service provider</td>
<td>Mr. Mashood Dori</td>
<td>Bulenga</td>
<td>January 29th, 2015</td>
</tr>
<tr>
<td>Aggregator, retailer</td>
<td>Amamata</td>
<td>Bulenga</td>
<td>February 9th, 2015</td>
</tr>
<tr>
<td>Commercial farmer, seed grower, tractor service provider</td>
<td>Iddrisu MacAdams</td>
<td>Loggu</td>
<td>February 9th, 2015</td>
</tr>
<tr>
<td>Seed grower, commercial farmer</td>
<td>Alhaji Nuhu Orison</td>
<td>Wa</td>
<td>February 9th, 2015</td>
</tr>
<tr>
<td>Seed grower</td>
<td>Fatawu Nuhu</td>
<td>Wa</td>
<td>February 9th, 2015</td>
</tr>
<tr>
<td>Input supplier, commercial farmer,</td>
<td>Antika Agro-Inputs</td>
<td>Wa</td>
<td>February 10th, 2015</td>
</tr>
<tr>
<td>commercial farmer, Thresher/tractor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>service provider</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Role/Industry</td>
<td>Name/Profile</td>
<td>Location</td>
<td>Date</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>---------------------------------------------------</td>
<td>----------</td>
<td>--------------------</td>
</tr>
<tr>
<td>Input supplier, commercial farmer, tractor/thresher service provider</td>
<td>18th April Company, Mr. Osman</td>
<td>Wa</td>
<td>February 10th, 2015</td>
</tr>
<tr>
<td>Soy milk processor</td>
<td>Baaru Enterprise</td>
<td>Wa</td>
<td>February 10th, 2015</td>
</tr>
<tr>
<td>Market retailer, village aggregator</td>
<td>Adisah Yusif</td>
<td>Wa</td>
<td>February 10th, 2015</td>
</tr>
<tr>
<td>Financial institution</td>
<td>Sissala Rural Bank</td>
<td>Tumu</td>
<td>February 11th, 2015</td>
</tr>
<tr>
<td>Aggregator, thresher service provider</td>
<td>Mr. Bontie</td>
<td>Tumu</td>
<td>February 11th, 2015</td>
</tr>
<tr>
<td>Equipment manufacturer</td>
<td>Gratis Foundation</td>
<td>Wa</td>
<td>February 12th, 2015</td>
</tr>
<tr>
<td>Government</td>
<td>Ministry of Food and Agriculture (MOFA)</td>
<td>Wa</td>
<td>February 12th, 2015</td>
</tr>
<tr>
<td>Trade association</td>
<td>Seed Producers Association of Ghana (Seed PAG)</td>
<td>Wa</td>
<td>February 12th, 2015</td>
</tr>
<tr>
<td>Government</td>
<td>Meteorological Department, Gustav Immanuel Imbia</td>
<td>Wa</td>
<td>February 23rd, 2015</td>
</tr>
<tr>
<td>Aggregator</td>
<td>Mr. Issiah</td>
<td>Tamale</td>
<td>February 27th, 2015</td>
</tr>
<tr>
<td>NGO</td>
<td>Association of Church-based Development NGOs, Mike Pervarah</td>
<td>Tamale</td>
<td>March 3rd, 2015</td>
</tr>
<tr>
<td>NGO</td>
<td>Agricultural Technology Transfer (ATT), Samuel Atiya</td>
<td>Tamale</td>
<td>March 5th, 2015</td>
</tr>
<tr>
<td>Government</td>
<td>Deptmante of Foreign Affairs, Trade, and Development (DFATD), Baba Jawad</td>
<td>Tamale</td>
<td>March 5th, 2015</td>
</tr>
</tbody>
</table>