GHANA
Agricultural Overview
Political
- Ghana is considered one of the more stable countries in West Africa since its transition to multi-party democracy in 1992
- The country also has a strong sense of national identity and unity that supersedes other affiliations such as ethnicity
- Ghana's governance has seen significant progress through the strengthening of its democratic credentials.

Economic
- Economic growth fell from 14% in 2011 to 3.5% in 2016. The economy recovered in 2017, growing an estimated 6.3%, spurred by recovery in nonoil sectors, lower inflation, and new hydrocarbon wells.
- Weak economic growth squeezed by tight monetary policy and lower oil production in 2016 have led to a decline in government revenues. Budget performance is expected to improve after the budget deficit drop from 8.9% of GDP in 2016 to 4.7% in 2017.
- Budget improved from a deficit in 2016 to a surplus of 0.8% of GDP in 2017. The debt to GDP ratio is estimated at 69.2% in December 2017 down from 73.4% in 2016

Social
- The growing rate of urbanization without the creation of proportional number of jobs, coupled with population growth rate has resulted in high unemployment
- Food production is one of the major social security issues in Ghana. With the ever-growing population, feeding the country is a challenge.

Technical
- Shortages of electricity and water are possibly the most pressing issues, with blackouts being experienced on a fairly regular basis
- There is a fairly good network of roads

Environment
- The exploitation of Ghana's natural resources, coupled with the overall lack of environmental awareness, has devastated the country's forests. In less than 50 years, Ghana's primary rainforest has been reduced by 90 percent, while in the past 15 years (1990-2005), the country lost 1.9 million hectares or 26 percent of its forest cover.

Legal
- Poor governance and lack of Transparency, Accountability and corruption in the public sector continue to be an issue in the country

Key Takeaways:
- There is good political stability which is one of the important factors in attracting investors.
- Energy sector is challenged resulting in inadequate electricity for the countries needs
- The economy is recovering and is showing good growth prospects
- High unemployment is a major issue
Agricultural Dynamics - Overview

- **Overview**

  - Agriculture in Ghana is predominantly on a smallholder basis. About 90% of farm holdings are less than 2 hectares in size. Although there are some large farms and plantations, these are usually for rubber, oil palm, coconut, and in recent times; rice, maize and pineapples.

  - Main system of farming is traditional; the hoe and cutlass are the main farming tools. There is little mechanized farming, but bullock farming is practiced in some places, especially in the North. Agricultural production varies with the amount and distribution of rainfall but soil factors are also important. Most food crop farms are intercropped, with mono-cropping mostly being associated with larger-scale commercial farms.

  - Agriculture’s contribution to total employment is estimated to be 52 per cent (GLSS6, 2013). The Ghanaian market is relatively open even with the recent implementation of the ECOWAS Common External Tariff (CET). The CET replaced Ghana’s previous tariff schedule; with complete free trade for ECOWAS countries and new CET rates for the rest of the world. Although Ghana’s previous tariff rates were already structured similarly to those of the CET, full adoption of the CET required a reduction of certain existing tariffs and an increase of others, as well as the introduction of a new 35 percent tariff rate for products considered particularly sensitive, such as printed fabrics, poultry, and other meats.
Agricultural Dynamics – Cereal Yield

- Growth in cereal yield per hectare has been very poor.
- Although there has been a general upward trend, the cereal yield remains far below the world average and the yield achieved in other economic blocks around the world.
- Part of the reason for this is the low utilisation of fertilizer and poor farming methods.
- There is an opportunity to work with the farmers in improving yields which would lead to the following:
  - Opportunities to export
  - Banks may be more willing to lend funds when yields are better
  - Opportunities for processing
  - Stronger food security for the country
  - Better return for farmers
• Although cocoa productivity has recently been increasing in Ghana, it is still low compared with that of other countries such as Cote d’Ivoire and Malaysia. This situation has been attributed to the low adoption of cocoa production technologies.
• Aging cocoa trees have also contributed to the yield obtained in the country
• The cocoa farmers are aging and the youth are not taking up farming
• Various diseases have also contributed to huge post-harvest losses further exacerbating the situation
• In the recent years, falling cocoa prices in the world market have discouraged many farmers who abandoned the crop for other better paying cash crops.
• The world prices have began to recover. This coupled with government efforts to provide new and better yielding varieties has encouraged farmers to replace the aging trees.
The Fertilizer Market – Use rates

Although there has been a steady increase in the use of fertilizer from 3.75kg/Ha in 2002 to 23.8kg/Ha in 2015 this is still far below the world average of 137kg/Ha.

The government introduced subsidised fertilizer in 2008 and has ran the subsidy in one from or another up to 2017 except for 2014. There are 3 subsidy schemes that currently running
- The Ghana cocoa board has a subsidy for cocoa farmers that is managed under ministry of finance
- The national fertilizer subsidy program managed under ministry of agriculture
- In 2017 the government introduced another subsidy - Planting for Food and Jobs (PFJ) to run alongside the national fertiliser subsidy

The huge jump in apparent consumption in 2017 is due to the introduction of the PFJ.

The increase in fertiliser use is thought to be largely boosted by the government subsidy and the Cocoa plantations as evidenced by the significant drop in 2014 (almost to pre-subsidy levels) when no subsidy was provided.

The subsidy given to the farmer (15 bags/farmer) is much higher than the neighbouring countries. As a result a significant portion of the subsidised fertilizer is smuggled into neighbouring countries. This may lead to higher consumption figures than the actual which is 13 – 15Kg/Ha.

<table>
<thead>
<tr>
<th>REGION</th>
<th>2002</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ghana</td>
<td>3.7</td>
<td>23.77</td>
</tr>
<tr>
<td>World Average</td>
<td>106.4</td>
<td>137.6</td>
</tr>
<tr>
<td>Middle East &amp; North Africa</td>
<td>88.6</td>
<td>105.3</td>
</tr>
<tr>
<td>Latin America &amp; Caribbean</td>
<td>89.5</td>
<td>122.7</td>
</tr>
<tr>
<td>European Union</td>
<td>166.6</td>
<td>157.2</td>
</tr>
<tr>
<td>East Asia &amp; Pacific</td>
<td>246.1</td>
<td>327.9</td>
</tr>
</tbody>
</table>
SPLIT OF 2017 FERTILIZER CONSUMPTION

<table>
<thead>
<tr>
<th>Fertilizer system</th>
<th>Volume (MT)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cocoa</td>
<td>87,113</td>
<td>20%</td>
</tr>
<tr>
<td>Direct Subsidy</td>
<td>140,000</td>
<td>32%</td>
</tr>
<tr>
<td>PFJ</td>
<td>120,624</td>
<td>27%</td>
</tr>
<tr>
<td>Private</td>
<td>92,924</td>
<td>21%</td>
</tr>
<tr>
<td></td>
<td>440,661</td>
<td></td>
</tr>
</tbody>
</table>

*345,126mt (78%) of Fertilizers were subsidized by the Government in 2017

- The trend in 2017 shows that the private sector participation in the fertilizer value chain is being drowned out by the public sector.
- The subsidy in Ghana (up to 15 bags/farmer) is much higher than the neighbouring countries and therefore encourages leakages of a significant volume of the subsidized product across the borders.
- The risk arising from the current situation is:
  - when the subsidy ends, the private sector will not be in a position to adequately fill the gap.
  - After several years of relying primarily on subsidised fertilizer, farmers will find it difficult to transition to a market driven environment.
- The soils especially in northern Ghana are well mapped and this information can be used in formulating crop/region specific fertilizer
## Main fertilizers used in Ghana by crop

<table>
<thead>
<tr>
<th>Crop</th>
<th>Fertilizer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cocoa</td>
<td>Yara Asaasewura PK 0-22-18+9CaO+7S+6MgO</td>
</tr>
<tr>
<td></td>
<td>Chemico Cocofeed PK 0 30 20</td>
</tr>
<tr>
<td></td>
<td>Chemico Cocofeed Plus- NPK 2-21-17+9.9Ca 4.8Mg 4S 0.3Zn 0.1B</td>
</tr>
<tr>
<td></td>
<td>LDC Cocoa Master NPK 1-21-19 + 9 CaO + 6S + 6MgO + 1B</td>
</tr>
<tr>
<td>Maize</td>
<td>NPK 23-10-5+2MgO+3S+0.3Zn (Yara Actyva);</td>
</tr>
<tr>
<td></td>
<td>NPK 23-10-5 + 4MgO + 2Zn</td>
</tr>
<tr>
<td></td>
<td>NPK 15-15-15 basal (or other types of NPK depending on availability)</td>
</tr>
<tr>
<td></td>
<td>Urea and SoA in top dressing; 40:0:0+6S (Yara Amidas)</td>
</tr>
<tr>
<td>Rice</td>
<td>NPK 15 15 15 basal (or other types of NPK)</td>
</tr>
<tr>
<td></td>
<td>NPK 23-10-5+2MgO+3S+0.3Zn (Yara Actyva)</td>
</tr>
<tr>
<td></td>
<td>Urea and SoA in top dress; 40-0-0+6S (Yara Amidas)</td>
</tr>
</tbody>
</table>
The total supply is split as follows:
- Government subsidy – 59%
- Cocoa plantation – 20%
- Private sector – 21%

- The subsidized fertilizer accounts for 79% of the total consumption
- This has left very little room for private sector participation.
- This kills competition and the innovation that would take place in a competitive environment.
The Fertilizer Market – Supply & Distribution

**Structure of supply**

- Almost all the fertilizers consumed in Ghana are imported. A few private firms import all the fertilizers in the country probably due to the barrier created by the cost of importation, especially since access to finance is difficult in Ghana.

- At the wholesale level are distributors for or agents of the importers, other wholesalers and parastatal producer organizations, primarily the COCOBOD.

- Though there is excess urea capacity in Nigeria, very little of the urea from Nigeria is distributed in Ghana – the relationships between the bulk buyers and importers seem to exclude regional supply.

- The 6 blenders in the country participate in the Government subsidy programs directly.

- The COCOBOD has its own dealer network for cocoa fertilizers, but these dealers also sell other agro-inputs. The vast majority of the fertilizer is sold to private retailers, who in turn sell their products to smaller retailers or directly to farmers.

- The dealers are not involved in the subsidy negotiations and as a result they are left with very low margins on the subsidised fertilizer.
Average Urea Retail Prices (Oct ’17) in selected countries

- Urea price in Ghana competes with that of Nigeria though Nigeria produces and exports Urea
- Only an insignificant part of the urea used in Ghana is imported from Nigeria

<table>
<thead>
<tr>
<th>Country</th>
<th>US$/MT</th>
<th>Ratio to World Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>240</td>
<td></td>
</tr>
<tr>
<td>Nigeria</td>
<td>401</td>
<td>1.5 - 1.74</td>
</tr>
<tr>
<td>Ghana</td>
<td>406</td>
<td>1.75 - 1.99</td>
</tr>
<tr>
<td>Tanzania</td>
<td>412</td>
<td>1.75 - 1.99</td>
</tr>
<tr>
<td>Kenya</td>
<td>486</td>
<td>2.00 - 2.24</td>
</tr>
<tr>
<td>Mali</td>
<td>521</td>
<td>2.25 - 2.49</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>525</td>
<td>2.25 - 2.49</td>
</tr>
<tr>
<td>Zambia</td>
<td>540</td>
<td>2.50 - 2.74</td>
</tr>
<tr>
<td>Malawi</td>
<td>550</td>
<td>&gt; 2.74</td>
</tr>
<tr>
<td>Cote d'Ivoire</td>
<td>551</td>
<td></td>
</tr>
<tr>
<td>Uganda</td>
<td>590</td>
<td></td>
</tr>
<tr>
<td>Senegal</td>
<td>604</td>
<td></td>
</tr>
<tr>
<td>Rwanda</td>
<td>614</td>
<td></td>
</tr>
<tr>
<td>Mozambique</td>
<td>654</td>
<td></td>
</tr>
<tr>
<td>Burundi</td>
<td>914</td>
<td></td>
</tr>
</tbody>
</table>
Crop Prices: History and In-Country Ranges

Observations & Comments:
- The range of prices within country is large.
  - This indicates that profitability may also vary greatly by geography.
- The price range does appear to have narrowed over time. Narrowing would be expected if transport infrastructure had improved, thus better linking the various marketplaces.
Average Crop Prices versus World Urea Price

Observations & Comments:

- Since 2014 maize prices appear to have de-linked from urea prices.
- Rice has consistently shown little to no correlation.
Average Crop Prices in international markets

Observations & Comments:
• Maize and Rice prices were trending downwards since 2014
• 2017 appeared to have bucked the trend
• Maize and Rice prices in Ghana appeared to be disconnected from international markets.
# The Fertilizer Market – VALUE CHAIN SWOT SUMMARY - Ghana

## Strengths

| Manufacturer | • Availability of gas |
| Importer | • Access to finance |
| Blender | • Access to Finance-flexible borrowing terms from international parent companies |
| Blender | • Working with regulatory body to improve available blends |
| Blender | • Adulteration |
| Blender | • Lack of motivation to add secondary and micro nutrients due to subsidy and price being fixed |
| Distributor | • Agro Dealer relationship |
| Distributor | • Strong distribution networks |
| Agro Dealer | • Farmer interaction / relationships |
| Agro Dealer | • Warehouse capacity in key regions |
| Processor | • Demand for finished product |

## Weaknesses

| Manufacturer | • Very little value-addition locally |
| Importer | • Flagship PFJ program that has been expanded to reach more farmers. |
| Blender | • Adulteration |
| Blender | • Lack of motivation to add secondary and micro nutrients due to subsidy and price being fixed |
| Blender | • Government subsidy plan to promote soil and crop specific fertilizer blends in Ghana promotes local producers |
| Blender | • Use of granular urea |
| Distributor | • Lack of capital |
| Distributor | • Distribution competence |
| Distributor | • Inadequate reach of distribution network, especially in rural areas |
| Distributor | • Subsidy is an important part of the business (leading to export to other countries) |
| Agro Dealer | • Lack of working capital |
| Agro Dealer | • Footprint still not within farmer proximity in some regions |
| Processor | • Lack of working capital |
| Processor | • Side selling by outgrowers |
| Processor | • Insufficient feedstock |

## Opportunities

| Manufacturer | • Gov’t policy for soil and crop specific blended fertilizer with interest in local blenders |
| Blender | • Govt subsidy program delays in paying importers |
| Blender | • Use of granular urea |
| Blender | • Flagship PFJ program that has been expanded to reach more farmers. |
| Blender | • Availability of granular urea in Nigeria |
| Distributor | • GHIRISAL - Credit guarantee options for distributors |
| Agro Dealer | • Farmer education and product promotion |
| Processor | • Government initiative to support local production especially within the poultry sector |

## Threats

| Manufacturer | • Competition from cheap gas in Nigeria |
| Importer | • Gov’t policy for soil and crop specific blended fertilizer with interest in local blenders |
| Blender | • Govt subsidy program delays in paying importers |
| Blender | • Lack of monitoring/poor regulation enforcement by PPRSD. Fear that some blenders will use low grade raw materials |
| Distributor | • Fixed transport margins imposed on fertilizer distributors under FSP which discourages distribution to rural areas |
| Agro Dealer | • Open bag sales: Inadequate monitoring of fertilizer quality |
| Processor | • Enforcement of forward contracts |
| Processor | • Reduction in crop production |

## Key Takeaways:

1. **Urea is mostly imported from Europe**
2. **The subsidy structure prevents distribution from actively seeking to make fertilizers available to farmers**
3. **The subsidy structure (pricing and payment delays) will push blenders into seeking compensation from product quality**
4. **Large distributors take advantage of subsidy to export into neighbouring countries**
5. **Processors have not developed a relationship with farmers though they suffer feedstock supply**
Finance:
Agricultural Economy Overview
Economic Overview: Major Points

• The agricultural economy is an important contributor to employment and GDP.
• The agricultural workforce is, on average, poorer than the national average.
  • This has significant implications relating to the ability to finance ag-sector activities.
Economic Overview

The agricultural economy is a significant part of the overall economy.

- About 40% of the workforce is currently employed in the agricultural sector.
- The ag sector generates a little under one fifth of national GDP.
Economic Overview

The size of the ag workforce is larger than its proportional contribution to GDP. This means that a smaller amount of GDP accrues to a larger number of workers.
Implications:

• On average, the ag workforce is “poorer” than average (below national parity).
• The ability of the ag workforce to build wealth (equity) is lower than average leading to:
  • Lower ability to self-finance their activities
  • Lower credit capacity
• This lack of financing has been confirmed in numerous surveys and studies.
• Lack of equity capital is severe and the most problematic financing issue to overcome.
• In the absence of new sources and/or structures to provide financing to the ag sector, it should be expected to grow at a sub-par rate.
Finance:
Commercial Banking Sector
Commercial Banking Sector: Major Points

• Commercial bank lending into the agricultural sector is extremely low given the size and importance of the ag economy.
• There are legitimate business reasons for this lack of lending.
• Financing the inventories of input dealers would be best achieved via trade finance.
• Financing the farmer, at the scale needed, is a problem that had yet to be solved.
Commercial Banking Sector

Comments and Observations:
• Loans to the agricultural sector are a very small part (<3%) of the banking sector’s asset mix.
• In relation to the ag sector’s importance in terms of employment and GDP contribution, ag lending lags far behind.
Commercial Banking Sector

Comments and Observations (continued):

• Bank lending to the ag sector is so small due to the nature of capital financing. Capital comes in two basic types, equity and debt.
  • Equity is the risk bearing capital. It participates in the gains/losses of the enterprise.
  • Debt’s return is fixed, it does not participate in the gains/losses of the enterprise. Thus it is not risk bearing. Debt is mean to be additive to, or leverage, equity capital. It is not a substitute for equity.
• Legitimate business reasons can explain why ag lending is so small. Two major factors are:
  1. Ag sector participants do not have adequate risk capital (equity) to support debt. Banks cannot be expected to provide debt financing when there is a lack of risk bearing (equity) capital.
  2. Even ignoring risk, small sized and short maturity loans are not profitable for banks. Many financing needs in the ag sector have these attributes.
The unfulfilled demand for financing becomes more acute as you go down the distribution chain.

Lack of creditworthiness and loan profitability make commercial bank lending less viable as you go down the distribution chain.

The economic attributes of financing fertilizer distribution down to the local agro-dealer level are very different from those of financing the end-user farmer.
Financing for Increased Fertilizer Usage

• Farmer financing, especially smallholder farmers, is the most difficult part.

• Some fertilizer demand goes unfulfilled due to lack of physical product where and when it’s needed (effective demand). This needs to be addressed with inventory financing that allows supplies to position inventories when and where they are demanded.

• Even if the inventory financing issues are eliminated, much demand will go unfulfilled due to lack of financing at the end-user farmer level (latent demand).

• Increased usage of fertilizers requires profitability and ability to purchase at the end-user farmer level.
Financing for Increased Fertilizer Usage: Possible Solutions

• Distribution Chain (Inventory) Financing
  • Trade credit offers the most promising route to provide inventory financing down the distribution chain. This is due to its attributes of:
    • Building business trust relationships between supplier and customer.
    • Control of physical flows allows for more efficient management and monitoring of credit risk.
    • Financing improves turnover and thus profitability, allowing financing costs to be balanced against product margins.

• Farmer Financing
  • This is the large problem that has yet to be solved. Several mechanisms have shown promise such as:
    • Outgrower programs
    • Aggregator programs
  • The scalability of the above programs is an issue due to the amount of management capacity and monitoring required to keep losses in check.
  • New sources of funding and new credit delivery mechanisms need to be created. Some type of equity (risk bearing) financing needs to part of the solution.
Finance:
Fertilizer Profitability
Fertilizer Profitability: Major Points

- Fertilizer profitability has a direct and important influence on demand.
- Demand is the key element that shapes the structure of the supply side.
- Realized demand depends on potential buyers to be both willing and able to purchase.
- Fertilizer profitability is impacted by large number of complex and ever changing factors. This makes it difficult to analyze.
- For the crops analyzed in Ghana, our analysis shows that rice profitability should support increased demand. The picture for maize is much less positive. In both cases farmers’ ability to purchase the inputs will soften demand.
Fertilizer Profitability & Demand

• The statistics showing that fertilizer usage in Africa has consistently lagged behind world averages have been well publicized for many years. This fact has driven many efforts across the continent with goal to reduce or eliminate this gap in an effort to increase farm yields.
• In the final analysis, end-user demand will be the driving force that shapes fertilizer distribution systems and the volume that they need to deliver.
• When approaching the demand environment, it is critical to understand the two major types of demand and how they impact current and potential usage of fertilizers:
• **Effective demand** – This is the volume of demand where the end-user farmer is both willing and able to purchase the products. Effective demand is determined by many factors such as cost/benefit, available supply and ability to purchase. While there exist gaps in certain markets where supply does not meet effective demand, these gaps are usually filled by profit seeking sellers and do not exist for long periods of time. Inefficiencies imposed on the supply chain could however artificially maintain the gaps
Fertilizer Profitability & Demand

- **Latent Demand** – This is the volume of demand where the end-user farmer would be a willing buyer, but lacks a necessary element in order to become an able and willing purchaser. Common factors that determine latent demand can be product knowledge, unknown cost/benefit and lack of funds.

- Consensus is that latent demand far outstrips gaps in meeting effective demand. There have been numerous programs focused on turning latent demand into effective demand, a few examples are:
  - Farmer training and demonstrations
  - Subsidy programs
  - Input loan programs

- Notwithstanding these efforts, the “fertilizer usage gap” still remains.

- Understanding the factors behind latent demand is needed in order to:
  - Identify effective ways to address those factors, and
  - Forecast the volume of potential demand in the market. This is critical for private sector investors who are making investment decisions.
• We look to analyze fertilizer profitability because it has an important, but not exclusive, role in the determination of product demand.
• Although total profitability of farming is a function of many factors, it is safe to say that the economic return to the farmer from fertilizer usage defines some important limits. If economic returns are low to negative, issues of supply, education and others become moot. Conversely, high economic returns imply high potential demand. Either case will have significant impacts on investment decisions along the distribution chain.
• Returning back to the well known statistics on fertilizer usage in Africa, before one states that Africa should eliminate the usage “gap”, one needs to first demonstrate that doing so will not cause economic harm to the farmer.
There is no single figure that represents the profitability of fertilizer usage. Profitability is a “local not global” concept that is influenced by:

- Specific geography
- Crop
- Method of usage/application
- Other agronomic factors such as seed and CPPs
- Ever changing market prices (input and crop)
- Weather
- Soil conditions
- Timing of input purchase and sale of crops

... and these are just to name a few!

Compounding the above issues are difficulty in getting accurate and consistent data with respect to costs, price and yield responses.

Thus, we must preface this analysis with the caveat that our results are not definitive but indicative.
Fertilizer Profitability Analysis

• We have limited the analysis to two staple crops, maize and rice.
• Specific sites were chosen that were central market locations.
• The most recent growing season was chosen where reliable data was available.
• We used fertilizer prices in effect at the planting season and crop prices at harvest season. While this may represent a “worse case” (for example crop prices can be at seasonal lows during harvest) we felt that it best represented the reality of the smallholder farmer.
• We used suggested fertilizer application rates and only considered “basic” products (DAP, Urea, NPK) and not any blended products.
• The analysis assumes that fertilizer application is the only variable. In practice, combining improved fertilizer usage with improved seed and other inputs and practices can maximize overall yield gains.
• Valid yield response data allows for direct computation of profitability given knowledge of fertilizer prices, application rates and crop prices. However, getting such yield response data is the greatest challenge.
• Because of the difficulty in locating valid yield response data, we calculated a range of yield responses that would be needed to achieve a range of returns on investment (ROI).
• There is no scientific/objective level of a minimum acceptable ROI, but a practical rule of thumb is that a two time return (200% ROI) is needed.
In order to reach an acceptable profitability of 200% ROI a yield response in excess of 2 mt/ha is required. This is quite high versus observed results in field studies.

The conclusion is that the benefits of fertilizer usage may not be at a level that could support increased demand.

An additional issue would be the ability of farmers to finance the purchase.
In order to reach an acceptable profitability of 200% ROI a yield response of about 1.0 mt/ha is required. Some field studies have shown that an expected yield response of >2 mt/ha is achievable.

The conclusion is that the benefits of fertilizer usage are at a level that should strongly support increased demand.

As with maize, the remaining issue would be the ability of farmers to finance the purchase.
Fertilizer Profitability: Summary

• The analyses indicate that profitability should be a positive factor for increasing fertilizer demand with respect to rice in Ghana. The outlook for increased demand related to maize is much more suspect.
• Use of debt to finance fertilizer purchases introduces another cost that must be overcome. Obviously, the higher the cost of such financing, the lower the profitability thus reducing potential demand.
• Geographic location and infrastructure can have substantial impacts on profitability. Farms that are distant from centers of end-user demand and are served with poor transport infrastructure get “squeezed” from two directions. The cost of transportation lowers farm gate crop prices and increases input costs.
• Profitability is a necessary, but not sufficient element for supporting increased demand. Funds availability and product knowledge are examples of additional factors that shape final realized demand.
Ghana Highlights

• Ghana is a trade corridor and provides access to 2 land-locked countries
• Ghana has gas reserves that could support urea production
• But imports almost all fertilizers
• Fertilizer subsidies have increased in Ghana within the last 3 years
• The subsidies risk crowding out private sector investments and distorting private sector activities
• A significant amount of the subsidies filter into neighbouring countries
• The mapping of the Ghanainan soils is being complete
• Farmer profitability analysis shows a stronger adoption potential for rice
• Trade and risk-bearing farmer financing structures are required to support fertilizer growth