

Rethinking
Intra-African Trade
through **CAADP**
implementation

Lessons for CAADP Implementers from a Comparative Review Of
The Dairy Industries In Kenya, Ghana and India

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Recommended citation: Local Development Research Institute. 2016. Rethinking Intra-African Trade Through CAADP Implementation: Local Development Research Institute.

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Published: September 2016

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Acronyms & Abbreviations

AI	Artificial Insemination
ASDS	Agriculture Sector Development Strategy
ASCU	Agricultural Sector Cordination Unit
CAADP	Comprehensive Africa Agricultural Development Plan
ECDPM	European Centre for Development Policy Management
FAOSTAT	Food And Agriculture Organisation Statistics Division
GDP	Gross Domestic Product
KCC	Kenya Cooperatives Creamaries
LME	Liquid Milk Equivalent
MLSF	Medium to Large Scale Farmers

Introduction

The dairy industry is an important source of livelihood for the farmers that engage in it. It provides an avenue for income generation for smallholder farmers and contributes to the household asset base through finance and insurance. However, it is the role it plays in alleviating hunger and malnutrition that makes it vital. The dairy sector contributes substantially to household nutrition security especially for vulnerable members of society, including children, the invalid and the elderly.

Though the CAADP's four pillars (land and water, markets and infrastructure, food security, research and technological adoption) do not explicitly single out the dairy nor the livestock sector, the role of the dairy sector in fulfilling CAADP's principles could be read into CAADP's commitment to alleviating malnutrition in the continent and reduction of stunting among children to 10%.¹ The CAADP Companion Document goes on to highlight the general importance of the livestock sector in Africa. There is emerging data that suggests livestock's potential contribution could be much larger than is currently believed. It has the capacity to contribute to economic growth, alleviate poverty and improve food security.² An effective dairy sector is key to achieving CAADP's principles in most African countries while improving the lives of many communities in these countries.

Intra-African trade is expected to triple through the efforts undertaken by CAADP and Agenda 2063 in general with agriculture playing a key role in this growth. The dairy industry is one which provides an opportunity for member states to grow their export volumes and create wealth for millions of small holder farmers in Africa. In 2013, African countries imported more than \$3.6B worth of processed dairy products ranging from whole milk to dried skimmed milk (FAOSTAT). Some of this milk came from overseas markets whereas African countries could have supplied the same. Data from FAOSTAT shows the value and volume of dairy imports by African countries continues to grow demonstrating a growing demand for processed dairy. This is a signal for the potential of the dairy sector in contributing towards tripling of intra African trade.

A brief analysis of the effectiveness of the dairy sectors in Kenya, Ghana and India will be undertaken here as we explore the institutions in the value chain and aspects that determine the success or failure of dairy & livestock sectors in general. This has existential impact on the aspirations to triple intra African trade and contribution to eradication of hunger, poverty and reducing inequality in Africa. Lessons will be drawn from the analysis, on how best the CAADP's principles would be implemented and a framework suggested for evaluating the potential of priority commodities in tripling intra-African trade and consequently contributing to wealth creation.

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Between 2003 and 2013, African countries imported approximately \$28 billion worth of dairy products.”

Source: FAOSTAT

The Dairy Industry In Kenya

The Kenyan dairy industry is the largest agricultural sub-sector, contributing about 4% to Kenya's Gross Domestic Product (GDP).³ It is a dynamic industry producing about 80% of Kenya's total milk, approximately 5 billion litres. It employs about 1.8 million people across the country. The country's demand for milk is about 115 litres per capita per year, (projected to rise to 220 litres by 2030) and is rated as among the highest globally of any low-income developing country.⁴ 80% of those who supply milk to the market are smallholder farmers owning less than 20 cows. The growing middle-class in the country has led to greater demand for milk exerting pressure on the industry to adopt innovative ways to meet this demand and grow the industry in the coming years.

There are about 1,000,000 (a million) or more smallholder farmers in the milk industry in Kenya who dominate the industry at the production level. These are farmers that have about 3-5 acres of land although some may have more than 20 acres and others less than 0.5 acres and about two to five head of cattle yielding about 5 kg of milk per cow per day. Their sale of milk is enabled by surplus production. Out of the 5.2 billion litres of milk produced annually, 2.6 billion litres is consumed at the farm level while the other half goes to the informal and formal markets. The rest are about 3500 Medium to Large Scale Farmers (MLSF) who own about 50,000 cattle or more.⁵

Despite what seems like an impressive production quantity, Kenya imported 18,000 metric tonnes of milk in 2013 and 11,000 metric tonnes in 2014. Most of these imports were for fresh whole milk signalling the presence of a market deficit for processed whole milk in the country. Some of this milk was imported from Uganda which exports 80% of its dairy to Kenya (*source: ECDPM Briefing Note No. 78: Recent developments in the dairy sector in Eastern Africa*)

The production process in Kenya is followed by the collection, bulking and transportation process,

which has changed considerably as a result of market liberalisation policies of the early 1990s. Before then, there was an organised milk collection and bulking system in the formal market with two types of milk deliveries to the Kenya Cooperative Creameries (KCC) facilities. One was by individual dairy farmers and the other was by dairy cooperative societies. Following liberalisation of the sector, organisation fell into disarray. Now, there exist different complex systems depending on processors, intermediaries, the road network, milk sheds and other contributing factors. The transportation of milk depends on the amount that is being transported and the buyer. Most processors have their own collection, bulking and transportation system. Stainless steel cans and occasional plastic cans are used for bulking milk and delivering it to processors' collection and cooling centres. However, it is recorded that milk in Kenya is mostly transported on bicycles. Sometimes, plastic cans are used making the process unhygienic. There are along this value chain, some powerful trading intermediaries who further complicate the process, making the traceability of milk transactions unascertainable and increasing the risk of cross-contamination and microbial overload.⁶

46% of the marketed milk directly passes into marketed consumption, with 23% going directly into marketed consumption and 23% passing through cooperatives, traders, hotels and shops. 31% of the milk that passes through cooperatives, traders, hotels and shops (13% to the cooperatives, 9.3% to the traders and 8.7% to hotels and shops), 8% of it finds its way to milk processors. Only 1% of marketed milk finds its way directly to milk processors, which churn out only 9% in total of all marketed milk. The informal market penetrates the value chain even at the cooperatives level transacting in total, about 85% of marketed milk.

The reasons for the prevalence of raw milk as sold

through the informal market are:

1. It is 20% to 50% cheaper than processed milk
2. It is sold in variable quantities depending on how much money the customer has to spend
3. It is widely accessible and within reach of many people.
4. Many consumers are accustomed to consuming unprocessed milk.⁷

However, it is true that many Kenyans prefer raw milk to processed milk. It is considered healthier and most people prefer its taste and its high butterfat content. Despite the fact that it is riskier to consume unprocessed milk owing to its high microbial load by the time it reaches the consumer and its possible adulteration by farmers with water and other chemicals in order to achieve greater quantities, the preference holds among most Kenyans.

The growth of the informal milk market was made possible by various factors:

- The liberalisation of the sector in the early 90s following introduction of the SAPs by the World Bank. The collapse of the cooperatives

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Only 1% of marketed milk finds its way directly to milk processors

led to the mushrooming of informal milk trade to supplement expensive processed milk.

- Considering that Kenya's dairy sector is constrained by seasonality in milk production, the informal market was/is flexible and changes the prices depending on availability unlike the formal market hence making the milk readily available to the population.

- Even after processed milk was made available, the market had acquired a preference for raw milk. It is perceived as creamier, richer and tastier. Consumers also wrongly believe that boiling milk makes it safe for consumption and hence are unwilling to pay for the pasteurized milk.

- The preference for selling to the informal market is driven by a preference for cash. The informal sector is a cash sector while processors usually pay at the end of every month. Considering that milk is often the only recurrent revenue, the need for cash to cover daily expenses creates a strong preference for producers to sell to informal traders/hawkers.

- The informal market lacks a quality control system unlike the formal milk market. This enables producers to sell poor quality milk that would have otherwise been rejected by the processors. Moreover, during the rainy season when there is an influx of milk in the market, processors tend to reject more milk deliveries than during the dry season, leading to high post harvest milk losses which could be more than 6% of total production, reaching about 60 million kilograms. The informal market is equipped to consume this surplus milk that would have been wasted. Its flexible prices drop low fast fuelling more milk consumption among the population.

Despite its popularity, the informal milk market produces milk of substandard quality. The

quantity of raw milk during sale is in fact, usually less than what is perceived by the consumer. It is usually sold in containers of 250 ml which actually hold only 200 ml.⁸ Taking this into consideration and including possible adulterations, the price advantage between the raw milk and the processed milk dissipates.

The lack of a synthesised standard of quality for the milk produced in the country has affected the growing export industry in two ways. The low volume supplied to the processors is not enough to enable the growth of an export industry and as a result of lack of traceability in production, the quality of milk in the informal milk market does not meet the requirements demanded by international standards for dairy development, barring the entry of most of Kenya's dairy products into the international market. This has in turn prevented the dairy industry from contributing a larger share to the economy, as it has the potential to. Kenya is a leading producer of dairy products in the East African region whilst still the top destination for dairy products from Uganda. This reveals the potential of the industry to contribute more substantially to the economy and lead an agricultural transformation in the country if it were effectively managed. An effective implementation of CAADP in Kenya would contribute to a transformation of the dairy industry in the country.

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A majority of African countries lack the institutional capabilities (i.e.. Policy, managerial or administrative capacities) needed to harness the countries' *'later comer advantages'* for accelerated development.

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Dr Cosmas M O Ochieng
Executive Director, African Centre for Technology Studies

The Dairy Industry in Ghana

The dairy industry in Ghana remains vestigial at best. Demand for milk and milk products in the country exceeds the local production leaving a huge deficit that has to be met by imports. This is despite the fact that Ghana consumes less milk than the WHO recommended minimum of 200 kg per. The local Ministry of Trade, Industry and Presidential Initiative puts domestic milk production at an estimated 34,000 metric tonnes and an additional 37,195 metric tonnes on average of liquid milk equivalent (LME) was imported annually into the country. In 2010, the total amount of milk imported into Ghana was 28,267.5 metric tonnes.⁹ By 2013, total imports of milk products stood at 25,000 metric tonnes, a drop over the previous year when they imported slightly over 30,000 metric tonnes (source: FAOSTAT).

Ghana's milk comes from cattle that are tended to by herdsmen. These herdsmen are mostly Fulani. Herds could range from 20 to 200 with the larger herds necessitating an extensive approach to cattle feeding. A peculiar feature of this industry is that the herds themselves are not the property of the Fulani herdsmen but rather belong to absentee owners. Fulani herdsmen merely tend to the herds and their remuneration is most of the time, the right to the milk sold from the herds as well as a third of the calves from a female. The milk is then sold raw or processed to the urban or peri-urban areas in Ghana, with majority of it being sold raw or processed into wagashi (a soft cheese) at the farm level.

Milk production in Ghana is seen as a major income earner for the herdsman and his family. Majority of those involved in the milking force are the young, below the age of 30. 77% of these have various levels of formal education with a majority of them having acquired junior high school levels. Only 20% of these though, are said to have received formal training on good quality milk handling. Milk is either used for household consumption, marketed as fresh milk or processed at the farm level, into wagashi, a soft cheese. Much of it is sold

raw into the Ghanaian markets.

The milk value chain in Ghana is made up of differentiated actors who facilitate its movement to the ultimate consumer. These are assemblers (itinerant collectors), processors and retailers. The itinerant collectors are mostly men, who move from farm to farm-collecting milk from the farmers and delivering it to the processors and wholesalers/retailers in the markets. Wagashi assemblers are mostly female. The dairy processors are mainly involved in the production and sale of soft cheese or wagashi. Some of these processors produce yoghurt on a larger scale and in a more formal manner. The retailers are individual dairy product sellers that deal with the sale of milk and processed dairy products. They are either mobile or sedentary. They buy from the producers or the assemblers.

There are various problems that emerge after a brief study of the dairy value chain in Ghana. First is that as a result of the large number of actors along the chain, contamination of the milk occurs, increasing its microbial load by the time it gets to the ultimate consumer. Second, the fact that the Fulani herdsmen do not own the cattle, nor exercise control over them but only retain control over the milk, restricts their activities over the cattle. This has led to reports citing the Ghanaian dairy industry's predominance of low yielding cattle, coupled with poor farm management practices by herdsmen and farm owners. Third, the extensive method of feeding is disadvantageous for effective milk production. The cows are reported to lack fresh grass as well as adequate clean water for the animals. It also requires intensive labour to be able to provide for lactating cows, incurring high transportation costs which the Fulani herdsmen are unable to meet. It is also reported that a lot of the farms are far away from major roads and that there is a lack of storage facilities for left over milk and yoghurt hence increasing post harvest losses as a result of a poor cold chain.¹⁰

The real problem with Ghana's dairy industry

however, lies with its the lack of an assured marketing outlet. Supply is fuelled by demand and the provision of assured marketing outlets that are sufficiently remunerative to producers is a necessary condition for increased milk production. Ghana's dairy market understands that Fulani herdsmen milk the cows. It is reported that more than 80% of the farmers do not tie the cows' tail and hind legs during milking, easily contaminating the milk as the cows wag their tails. Milking is not done at a specific location as recommended but rather done in the kraal, which is unhygienic. Majority of the farmers use plastic utensils when milking and only a minority use hot water and detergent while cleaning these utensils. As a result, Ghanaians prefer imported dairy products, as it is perceived that the locally produced milk is done under unhygienic conditions and is therefore unsafe. This perception has done a great deal of harm to the dairy industry as it has precluded the formation of an assured marketing outlet. Increased production, as the government aims for, would be futile as the market would be unresponsive. As a result, the country has resulted to being a net importer of dairy products to supplement the deficit created by a consumer base that craves imported dairy. CAADP implementation in Ghana would require investment and policy changes to address this market challenges in order to achieve effective transformation of the agricultural sector.¹¹

The Dairy Industry in India

Over the span of three decades, India has transformed itself from a country of acute milk shortage to one of the world's leading milk producer with production exceeding 100 million tonnes in 2006.¹² It has transitioned from a net importer of dairy products to a net exporter of these products. The overhaul of the industry is something that most nations look to keenly to espy the various contributing factors that made it a success. Phenomenal success is attributed to a government initiative known as Operation Flood (1970-1996) and its intense focus on dairy development activities.¹³

Currently, dairy is the top-ranking commodity in India with the value output in 2004 at \$39 million, which is equal to the combined output of both rice and wheat. Despite the dairy sector's contribution to the economy, it receives less government budgeting than that of other agricultural sectors. The increasing population has put pressure on the dairy sector to produce enough to meet the rising demand. As India tackles these challenges, it has shown before that it is willing to employ innovative methods that make it possible for the dairy sector to change with a change in the market.¹⁴ An analysis of the dairy value chain in India would hence serve as a reference point for both Kenya and Ghana as they try to improve their

agricultural sectors for a fulfillment of CAADP.

Operation Flood's innovative approach to the Indian dairy sector was the linkage of rural milk shed areas to urban markets through the development of a network of village cooperatives for procuring and marketing milk. As a result, the organisation of Indian dairy cooperatives became a distinguishing factor of the Indian dairy industry. The government's involvement can be seen in its control of cooperative activity in the region. Out of the 14 major dairy cooperatives in India, the government retains control through state government equity, over 10 of them, 6 of which have equity in excess of 51%. 12 of the 14 cooperatives have government officers as managing directors, appointed by the state government. As the government retains control over these officers, they change as frequently as the government desires. Cooperatives that influence the dairy value chain in India are criticised as not acting in accordance with the true cooperative spirit but rather, as mere parastatals. However, the governance structure that is maintained through out the chain, from the state federation to the village societies significantly impacts farmers' involvement in the chain, a factor that impacts production. It was indeed government intervention in the early days of "Operation Flood" that enabled the increase of milk production and productivity, by ensuring the availability of veterinary services, artificial insemination (AI), feed and farmer education.

Small and marginal farmers who own about 33% of land and about 60% of female cattle and buffaloes run India's dairy industry. About 75% of rural households own on average two to four animals with about a third of rural incomes being dependent upon dairy. This is because dairy provides a source of regular income, whereas income from agriculture in general is seasonal. Livestock also serve as a security asset to be sold in times of crisis. This regular source of income

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Small and marginal farmers who own about 33% of land and about 60% of female cattle and buffaloes dominate India's dairy industry.

usually has a huge impact on minimising the risks to income. A report suggests that areas where dairy is well developed have less incidence of farmer suicide.¹⁵ It is these that produce most milk that finds itself in the dairy market. Operation flood connected these farmers to markets through the institutionalisation of dairy cooperatives. Due to little competition to cooperatives because the private sector has been precluded from operating in the sector only until recently, the cooperatives have been able to design a very effective distribution channel in urban areas. 45 million tonnes of the 100 million tonnes is consumed in the farmers' homes. 55 million is marketable surplus sold in both rural and urban markets, informally and formally with a large share of the produce, 85% of the marketable surplus, going through the informal channel. The formal channel is only able to account for only about 25% of the marketable surplus, which is about 15% of production.

Despite the fact that consumer awareness on product quality is increasing, most consumers in India have a preference for unpackaged unprocessed milk delivered by a local milkman because of the rich taste and perception of freshness associated with it. This explains why the informal dairy sector is able to account for majority of the marketable surplus. Consumer awareness for quality is increasing but in a very small portion of the population, as most urban consumers have acquired a very low but increasing interest in new products. The proliferation of supermarkets in the country offers competition for the organised cooperative movement as they retail high quality dairy products for a growing population. Increasing high quality dairy products in India requires more milk to be channeled through the formal sector, a factor that is challenging for the government, the cooperatives and the farmers. India's success in increase in production is nevertheless to be emulated by countries such as Kenya and Ghana.

Institutional Contexts for CAADP

There is a plurality of challenges arising from each dairy value chain studied. Most of them are similar across the countries and could be associated with various institutions that inform the industry, both formal and informal institutions. An example of these challenges include:

- Poor feeding practices
- Poor quality cattle breeds
- Lack of technical know-how by dairy farmers and poor extension support services.
- Poor organisational and managerial capacity of farmers and cooperatives.
- Lack of access to formal credit mechanisms

The study reveals that these issues are prevalent in all three dairy industries under study. The issues mentioned above reveal poor development of social insurance institutions, which cushion against change and are necessary for individuals to cope with adverse events. In these rural peasant societies on the margins of subsistence, adverse events can spell disaster. Agricultural success and progress on the other hand, demands a willingness to take risks. The absence of insurance thins resilience in these communities, affecting their ability to take risks that could positively impact their work. It for this reason that farmers are unwilling to increase the quality of their cattle breeds, or ensure quality of their feed instead of relying on seasonal rains.¹⁶ Insurance against crop failures and price fluctuations for dairy products would enable a certainty in the market that would enable the farmers to improve both the feed and the breed. This is difficult to ascertain where the price elasticity for milk is high occasioning demand for dairy products that is very sensitive to price changes. Such an environment precludes the formation of strong social insurance institutions, which are vital if traditional agriculture is to be

transformed.¹⁷

There is evidently a need for strong coherent regulatory institutions. Weak co-operative leadership and management occasion a lacuna in the development of regulatory institutions. The proliferation of informal milk channels, which preclude formal, well orchestrated organisation of the dairy industry is as a result of the lacunae created due to weak regulatory institutions. Following the liberalisation tendencies of the 20th century, both Ghana and Kenya's dairy industries suffered as a result of a lack of proper regulatory institutions in the countries. This is especially so as it has been argued that developing countries need more regulatory institutions because market failures are prevalent and more pervasive in these countries than in developed ones. Proper managerial systems need to be developed to ensure the development of a proper formal and accountable dairy industry.

Institutions for macroeconomic stability are necessary in enabling an environment where private investment can flourish. Market economies are not self-regulating and macroeconomic instability creates risk and uncertainty. Minimisation of risk is important if entrepreneurs such as dairy farmers are to take informed, long-term investment decisions. Financial markets are inherently unstable, which can have damaging real effects and therefore need careful supervision. This enables a responsible banking system and fiscal prudence, which are all important ingredients of macroeconomic stability. In turn, it makes it easier for farmers to access formal credit, which enables them to invest better and increase yields.

In the case of Ghana, property rights institutions indirectly affect its dairy industry. As mentioned above, Fulani herdsmen are responsible for Ghana's milk yet they do not own the cattle that produce the milk. They are instead, employees of absentee owners.¹⁸ Relying on these to drive

an agricultural transformation for Ghana's dairy industry is unwise. They do indeed have the rights to the milk produced but lack control over the cattle to be able to make proper decisions that could improve the breed. As a result, Ghana is plagued by the prevalence of a very large number of indigenous animals with low productivity and a small portion of crossbreeds.¹⁹ The lack of clear-cut property rights in the dairy sector precludes Fulani herdsmen who are in charge of production from having the incentive to invest and innovate as they lack the control over the return of assets that they are likely to accumulate. The same applies to women who milk cattle in most African countries but do not own the animals themselves as tradition views ownership of cattle as a male privilege. Changes in such perceptions could only be driven by a gradual change in social beliefs. However, these changes will be necessary to achieve agricultural transformation in Africa.²⁰

Dairy farming in Kenya is practiced in the Rift Valley and Central regions of the country. The Rift valley region that accounts for a lot of produce has periodically experienced post election violence as a result of historical land issues.²¹ Rift valley and Central regions experienced the worst of the 2007 post election violence and the aftermath included a devastating decrease in milk production. Periodic conflict severely hampers production, at times stagnating the industry. It is evident that there are poor institutions for conflict management in these regions. Social conflict damages economies because it diverts resources from directly productive activities and creates uncertainty, which deters investment. Minimisation of conflict requires a full range of institutions such as the rule of law, a fair legal system and a political voice for minority groups such as minority ethnic tribes living in both regions. These make it clear that, potential winners of social conflict will not benefit and that potential losers will be properly safeguarded.²²

Despite the impact of the lack of formal institutions

discussed above, it is crucial to remember that there are also in existence informal institutions, which have an important role to play. It is this paper's assertion that informal institutions either bar or enable institutional change that transforms an economy or an individual sector such as the dairy sector. India's successful formal institutions such as its regulatory institutions (the cooperatives), cannot be transposed to Kenya or Ghana without some level of adaptation. As stated in this paper's previous section, informal institutions (beliefs, customs, traditions and norms) legitimise formal institutions without which, an adoption of formal rules is futile.

The above study reveals unique informal institutions underlying the dairy sector in all three countries, which inform its performance. In Kenya and India, two things drive the informal milk trade high but not in equal measure. One is that it is a cash-on-hand trade. Farmers are paid immediately upon transaction unlike formal trade where they are paid monthly. However, it is the consumers' perception of unpasteurized milk that drives the informal dairy sector. Most people in these countries perceive the rich creamier taste and greater fat content of raw milk as a sign of freshness and high nutritive value. They also believe that boiling milk is enough to make it safe for consumption.²³ This in turn, has led to a proliferation of informal milk traders. Despite the fact that informal milk trade eventually increases the number of milk consumers in a country as a result of easy accessibility and affordability, it is also true that the practice produces milk of low quality, with a high microbial load, and many at times, adulterated with water and other substances. It has high coliform counts, has a high prevalence of brucellosis antibodies and high antimicrobial agents present. Moreover, informal milk channels siphon milk away from the formal channels, which in turn leads to low export earnings. In order to evade this barrier and design a dairy market transformation program, governments in both

Kenya and India need to respond to these norms.

In Ghana, most consumers often prefer imported dairy because it is perceived that the locally produced milk is done under unhygienic conditions and is hence, unsafe for consumption. As a result, most consumers would prefer to do without dairy products as seen by the low dairy consumption in the country than consuming those produced in Ghana. It is true that there are dire concerns for hygiene with the Ghanaian dairy sector. Most producers are unaware of the hygienic practices needed to produce quality milk. As a result, the market rejects the produce. The dairy sector is hence hampered as a result of lack of consumer confidence. It would be futile to adopt formal rules to improve the sector or plug in financial resources to increase output if perceptions of consumers are unfriendly towards the commodity. One necessary condition for increased milk production is the provision of assured marketing outlets that are sufficiently remunerative to producers. Experience from countries such as Kenya and Uganda point to marketing outlets being key initiators of milk production by smallholders. An effective transformation of the Ghanaian dairy sector would require an active creation of consumer confidence in the local dairy sector, without which, all other efforts would be futile.

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**It is the consumers’
perception of
unpasteurized milk that
drives the informal dairy
sector**

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Social conflict damages economies because it diverts resources from directly productive activities and creates uncertainty, which deters investment.

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Recommendations

This paper suggests a framework for addressing the intra African trade aspirations in implementation of CAADP. This framework would have to be implemented while paying particular attention to the formal and informal institutions present within the commodity value chain. As with the dairy sectors above, a study of a product's value chain process is crucial to understanding both enabling informal and formal institutions in order to inform institutional change that is in line with CAADP's principles. The suggested framework is the 5As Barrier Analysis Tool.²⁴

Markets are dynamic entities, characterised by a plurality of products, changing consumer demands and fluctuating prices. Generally, markets move toward technologies that provide a net improvement in social welfare - such as the transition from steam to diesel locomotives, or from black and white television to colour. However, market dynamics are not always sufficient to reach a desired objective that is projected to be of greater social interest - such as shifting from incandescent torchieres to compact fluorescent or from analogue Television to digital television transmission. In these cases, various informational (such as perceived risks or lack of familiarity with a new technology), financial or other social barriers may prevent the markets from realising all the benefits of a given technology. When such barriers occur, market transformation programs can work to facilitate greater levels of penetration and overall societal benefit through the reduction or the elimination of these market barriers.²⁵

The 5As framework is a tool that identifies market penetration barriers affecting entry of efficient products and technologies, following through a product's value chain, from the producer to the end-user. It begins with assessing the Availability, Awareness, Accessibility, Affordability and finally, its Acceptance in the market.

- **Availability:** Availability assessment analyses whether the product exists. In this case, is dairy available or should the

government's resources go into production of more milk? Is there demand for milk in a market, which is unable to produce? If so, what are the barriers that hamper its production? Are there adequate policies, technologies and other elements that will improve its availability?

- **Awareness:** Does the market know about the availability of the product? In this case, does the market know about the availability of milk? What is the overall level of awareness among consumers? What barriers could be preventing them from being informed?
- **Accessibility:** Does the market have easy access to the product through traditional distribution channels? Once there is availability and awareness, the next question is whether those that demand it have access to it. If not, what are the barriers that prevent their being able to access it? In this case, could it be distances from homes to retailers? How then could these issues be addressed?
- **Affordability:** Is the market able to bear the selling price? Does the higher purchase price effect a market barrier? In this case, are dairy products too expensive for a section of the market? What could be done to encourage lower pricing? Could the government offer subsidies to dairy farmers? Could it withdraw tax from dairy products?
- **Acceptance:** The last step of the 5A's barrier analysis brings together elements of the preceding 4As, with other factors that impact a purchasing decision - the form, fit and function of a product. In this case, a market's failure to accept certain dairy products effects a market barrier. Acceptance usually involves evaluating consumer confidence and improving on the four As mentioned above.

The process involves asking questions while analysing a product's value chain to understand

which market barriers are precluding market transformation. “Operation Flood” in India was able to respond to the fact that India’s dairy market experienced challenges with availability and accessibility of milk and milk products. Demand was present in urban centres but rural farmers were unable to meet it as they lacked the ability to. As a result, the solution was to link rural farmers to these markets through organised cooperative structures. The same is reported for Kenya today. The growing population accepts milk as a nutritive substance and as a result, there is demand of it from urban centres. However, more could be done to avail it to them through proper organisation of dairy cooperatives. This provides ready marketing outlets as has been seen, which in turn encourage more production by smallholder farmers. For effective analysis of a market’s conditions, Open data in the agricultural sector becomes a necessity. Such data is in turn crucial in informing not only the 5A analysis but also resulting policy decisions. There is need for data to enable intra and inter-county analysis. Indeed, without openly available data tools and resources, it becomes difficult to realise a true agricultural transformation.

What is needed however, in all these countries, is an effort in creating awareness and acceptance of processed milk in both Kenya and India and of local dairy products in Ghana. These are norms that inform organisation of the dairy industry which in turn affect its performance, more so in Kenya and Ghana than in India, whose population is gradually accepting processed milk. In Kenya, an effort should be made to inform consumers of the benefits of processed milk, vis-à-vis unprocessed milk. Most do not know the dangers associated with unprocessed milk and this lack of information drives irrational economic behaviour in the market as evidenced by the preference for raw untreated milk. When presented with the right information, consumers will most likely choose processed milk. This would in turn, increase not only safer milk consumption, but also increase the country’s capacity to export dairy products. Furthermore, it

would necessitate an improvement to the poor cold chain associated with the dairy industry here. The government’s efforts to provide coolers to farmers are applauded. However, to educate the public on the benefits of high quality dairy products would necessitate farmers and middlemen traders, out of their own volition, to improve the cooling process so as to provide the market’s demand.

In Ghana, efforts should go into creating consumer confidence in the local sector’s ability to produce dairy products that are safe for consumption. There is need to educate Fulani herdsman and other smallholder dairy farmers on the need to ensure hygienic practices while milking and handling milk. Moreover, there is need to relay this information to the public in order to improve acceptance of the products that are produced locally, instead of relying on imported dairy products. Without responding in the above ways, any effort to improve the dairy industry would be futile.

The above analysis brings to light the fact that there exists, in each industry, unique institutional arrangements that inform each sector’s performance. CAADP serves only as a framework whose application has the potential to improve livelihoods. It stems from the recognition by Africans, that enhanced agricultural performance is key to growth and poverty reduction through its direct impact on job creation and increasing opportunities, especially for women and for the youth; on food security, improved nutrition; and on building resilience.²⁶ A blanket approach to the implementation of CAADP would be insufficient in transforming agricultural practices in any sector, leave alone any country. Each agricultural sub-sector requires its own study and as a consequence, its own CAADP inspired reforms. The Kenyan ASDS approach to implementation of CAADP was in the form of blanket strategic goals.²⁷ The dairy sector receives worthy mention in the document. However, the mentions are descriptive of the sector. Where goals for the improvement of the sector are

articulated, there is no clear expression as to how to achieve these objectives. In essence, it lacks the structure that makes an effective strategic plan, failing to identify institutional lacunae and how to fill them for an agricultural transformation.²⁸

CAADP implementation in Kenya requires strengthening of most agricultural industries including the dairy industry. In light of devolution, most agricultural functions, except for agricultural policy, have been devolved to the county governments.²⁹ Despite CAADP being a national government policy framework, it is evident that its principles will be realised fully, if Kenya adheres to the constitutional devolution framework. The 5As analysis of different agricultural products needs collaboration among the various stakeholders at both national and county level. This includes farmers, extension service providers, the county government leadership, donors, retailers, consumer bodies and others.³⁰ Achieving this level of negotiation will fulfill the kind of public participation that is required by CAADP and embedded in the Constitution of Kenya 2010.

Identification of market barriers is a function of the county governments. Despite having the exclusive function to implement agricultural policy, they are better placed to afford CAADP discussions the level of participation they require. It is important to note that the constitution provides for collaboration between both levels of government. Article 189(c) provides for liaison between governments for the purpose of exchanging information, coordinating policies and administration and enhancing capacity. It is these collaboration structures that will be pivotal in ensuring an agricultural coordination mechanism for the transformation of agricultural markets in the country.

After a successful identification of areas where the market barriers lie in individual produce value chains, the county government would in turn relay this information to the national government through Inter-governmental collaboration

structures; the national government would thereafter allocate money or resources to the areas identified to eliminate the market barriers.³¹ In the case of the dairy industry in Kenya, increasing consumer awareness of the benefits of processed milk in the country, would be an effort best carried out by the counties: in county referral hospitals, through county entertainment venues and county advertisements.³² The national governments would also play a role by setting policies and laws that curb the informal milk trade.³³

Each agricultural market would necessitate a different form of collaboration between the national government and the county government. An Intergovernmental body such as the previous Agricultural Sector Coordination Unit (ASCU) would best lead these collaboration ventures. Different ministerial sectors, (such as transport, energy, environment...etc.) would need to collaborate in the transformation of different agricultural markets, while collaborating with a county equivalent agricultural committee. This would best be coordinated through an inter-governmentally constituted ASCU-like institution. These efforts would be mirrored in the county level to enable synergy and public participation. CAADP implementation is made possible when individual agricultural markets are strengthened. In-County analysis such as the 5As analysis discussions enable public participation required by CAADP and Intergovernmental collaborations would in turn enable the elimination of market barriers that constrain successes of agricultural products.³⁴

Identifying, designing and implementing measures to address market entry/expansion barriers is therefore not simply about new tools or frameworks but also about strengthening institutions within the state to collaborate and coordinate more effectively and consistently.

Conclusion

Agricultural transformation in the continent is not an easy feat. Each agricultural product demands a unique approach to market transformation. This is because, as seen from the analysis above, prevalent institutional structures inform market performance. As a result, institutional change is necessitated where certain institutions, (formal and informal), effect barriers to market transformation. In order to implement a transformative agenda such as CAADP, these market barriers have to be eliminated. Elimination will only occur when the barriers are identified, analysed and responded to. The best way to do so is through the 5A Barrier Analysis Tool, which basically involves an assessment of availability, awareness, accessibility, affordability and the acceptance of a product in the market. Due to the unique nature of each agricultural product's market, each will necessitate different collaborative ventures in Kenya, between the national government and the county governments. To streamline such collaboration, intergovernmental structures such as the former coordination unit (ASCU) will be pivotal in spearheading such efforts.

Implementation of CAADP is possible. However,

there is need to adopt an isolationist method to the different products that compose the agricultural sector. Each has its own value chain process and an improvement on each informs how much should be allocated at which level of the value chain in order to increase output and improve livelihoods for both consumers and producers. CAADP is more than just 10% budgetary allocation in agriculture. It is proper allocation of resources (monetary, social, physical, natural) for the improvement of individual agricultural sectors so as to improve the whole. Success calls for more than farm production: it requires better functioning agricultural markets and increased market access and trade; increased private sector investment along the value chains; increased availability and access to food and its utilization; social protection; and improved management of natural resources and the environment for sustainable agriculture.

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