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From Artisanal Processing to Agro-Based Industrialization: The Search for Tanzania's Pathway – Lessons from 5 Countries 20 Value Chain Studies

By

Julius Gatune Kariuki

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Dr Julius Gatune Kariuki

African Center for Economic Transformation (ACET)

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1.0 INTRODUCTION

Industrialization has been a key plank of Tanzania's development strategies since independence as it sought to transform its economy from low productivity and low growth to high productivity and dynamic economy, associated with structural change and sustained income growth. Like many African countries at the dawn of independence, Import Substitution Industrialization Strategy (ISI) was seen as the way forward. This drive saw the establishment of a significant industrial base as the policy of Import Substitution Industrialization strategy (ISI) was rolled out (1967-1985). However the onset if structural adjustment program (1986-1995) saw much of this effort dismantled (Wangwe et. al. undated). Thus the past attempts largely failed to deliver the industrial base.

All the same industrialization remains a quest for Tanzania and it should give the fact that agriculture is still the base of the economy. The current development plan of Tanzania elaborated in Tanzania Vision 2020 and further elaborated in the Integrated Industrial Development Strategy (IIDS) 2025. The strategy is now more focused with six sub-sectors targeted to drive Tanzania industrialization.

Agriculture is seen as central to this effort. The TDV 2025 envisions an economy which is transformed from a predominantly low productivity agricultural economy to high productivity agriculture as a basis for a diversified and semi-industrialized economy. Indeed agro-processing does a present a good opportunity. Africa is urbanizing rapidly creating demand for agriculture based products especially processed foods with the marketed share of food production now accounting for over 50% of the value of food consumed in many parts of Sub-Saharan Africa (Tschirley et al., 2015). Regional integration is also deepening creating important regional markets. Opportunities are also emerging global value chains where global supermarkets are sourcing globally.

However a market opportunity is not enough to build an industrial strategy and failed industrialization efforts of the past provides useful lessons. The opportunity need to ne addressable. For instance the Western consumer who is driving the global value chain has become very demanding for high quality products, including ready availability, flavor, quality, freshness, convenience, environmental safety, traceability, and in addition to all that, low prices. Thus if buyers cannot verify that the product has met certain Sanitary and Phytosanitary Standards (SPS) and consumer preferences, they will not buy. Therefore participating in the export VCs have significant requirements relating to quality, certification of different types, specialized storage and transport logistics making this opportunity not readily addressable ( ).

The so-called low hanging fruit need to identified first and addressed. And in addressing the low-hanging fruit opportunities, competencies can be build that can help address other opportunities. The ongoing urbanization in Africa presents that low hanging fruit. Urban markets are now 50% of all food markets and growing. Urban markets demand food that are convenient and this means processed or semi-processed Ready-To-Eat (RTE) foods. Further deepening integration couple with emergence of regional supermarket chains provides opportunity to address a much larger regional market. These two trend present a base upon which a veritable food manufacturing sector can rise.

Agrifood sector does indeed offer significant opportunities for transformation of the economy and creating the all-important jobs. Wilkinson & Rocha (2009 cited in Wiggins and Roepstorff 2011) have shown empirically that the ratio of GDP generated by agribusiness to that generated by farming increases from 0.57 for a sample of nine "agriculturally-based countries" (all in SSA) to 1.98 for a set of eleven "transforming countries" (mainly Asian) and to 3.32 for twelve "urbanized countries". For the United States, the ratio stands at 13. While in agricultural countries that have not undergone structural transformation, 63 per cent of the value added in the agrifood system was created on the farm, in the US, farming accounted for only 7 per cent. Input producers, agro-industry, trucking firms, restaurant employees, and others created the rest of the value added in the US agrifood system, implying that agribusiness is significantly important for value addition and economic prosperity.

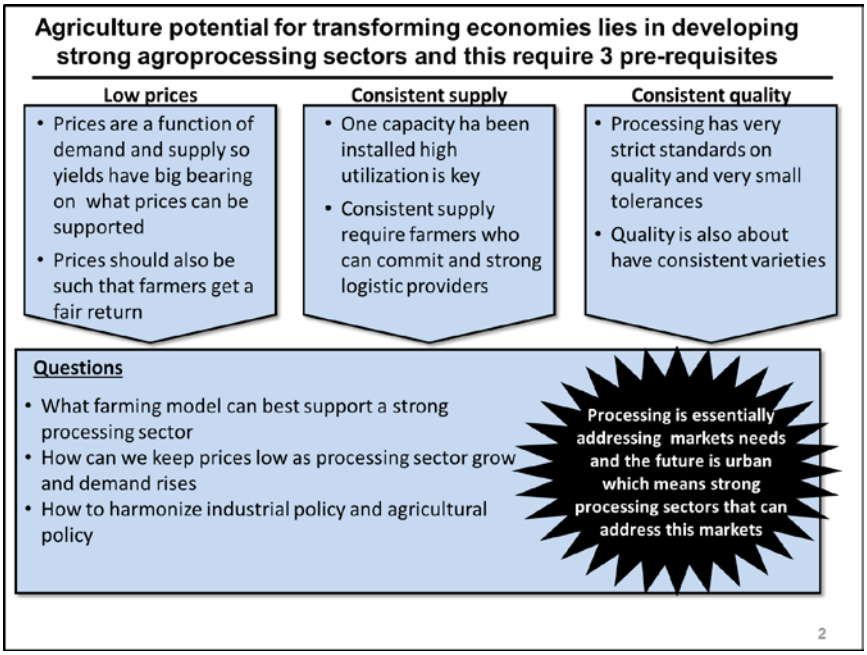
Food processing present an addressable opportunity that Tanzania can capture with the right support and policies. Excellence in this sector can be leverage to build other industrial sectors. However this is easier said than done. Reaping the so called Low-hanging fruit is not easy. The subsistence of orientation of the agriculture and fairly underdeveloped value chains means many challenges need to be overcome. Yields are low, quality is generally poor and rain fed agriculture and poor logistics means that supply cannot be guaranteed to support a strong agro-processing sector. There is need to re-orient, upgrade and re-engineer agricultural value chain to capture this opportunity. This requires innovations across the whole value chains.

All the same potential strategies for overcoming these challenges exist. Twenty agricultural value chain studies done by ACET across 5 countries (Burkina Faso, Ghana, Kenya, Tanzania and Uganda) points to a number of strategies. This paper is a reflection of lessons learned and also policy options needed to take advantage of these pathways and catalyze the emergence of inclusive and strong agro-processing sectors. Section 2 discuss the supply challenge and options for meeting the challenge, section 3 discusses the potential agro-based industrialization strategy, section4 discusses issues of financing the value chain, section 5 develops a policy framework while section six concludes.

2.0 TANZANIA AGRICULTURAL VALUE CHAIN – THE CHALLENGE

Developing strong agro-processing sector requires 3 key pre-requisites for the sector to be competitive and this has important implications**.**

Figure 1: Pre-requisites for Emergence of Strong Supply Chains

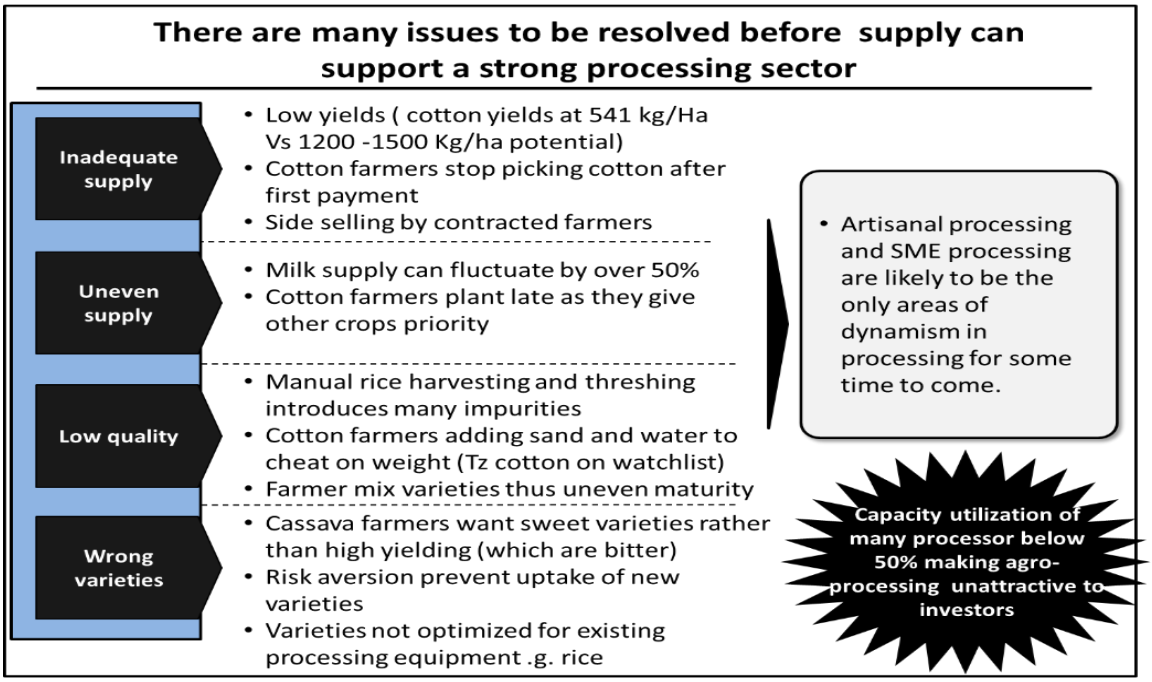


Developing the needed supply chain will require a deeper understanding of the production system and more critically coming with innovative solutions that address the challenges. This has been acknowledged in the TDV 2025 which calls for attention to science and technology and innovations to raise productivity in agriculture with priority to value addition by moving up the value chain in agriculture and promoting linkages with other sectors.

2.1 The Supply Challenge

However delivering these key pre-requisite requires value chains can support high productivity and deliver products in an efficient manner. However the agricultural value chains in Tanzania are plagued with many challenges. The challenges identified in our value chain studies are summarized in fig2.

Figure 2: Agricultural Supply Chain Challenges



Source: ACET (2015)

While many of the challenges enumerated have been documented before the key challenges that stand out from the usual and are also key as we seek to develop a string agro-industrial sector are:

Trust

While the cost of inputs is deterrence to their uptake for many resource constrained farmers, a bigger challenge in uptake of modern inputs was the preponderance of fake inputs. Governments are unable to police the input supply sector and this has created space for unscrupulous traders to sell face inputs..

Low levels of trust is also a key challenge. So, while farmers appreciate the benefits of membership of farmer based organizations (FBOs), farmers had low trust in them. This was due to governance challenges (corruption) that tend to face FBOs especially as they grow. Contract farming was also challenged by lack of trust. In all, the value chain studies due to farmers side selling. Farmers also complained that processors tended to reject their products on dubious claims of low quality when they did not want honor the contract, especially when they are overstocked. There is also a significant level of mistrust between farmers and traders. Farmers complain that traders cheat them on weight and indeed many refusing to use weighing scales as they feel traders have tampered with them. Traders are also wary of farmers. In Tanzania traders complain

that farmers mix sand with cotton and sell wet cotton to cheat on weight. The result is that cotton from Tanzania is now on a watchlist in the world market.

Quality

Attention to quality was found to be very low. Farmers use rudimentary tools to harvest and in the process contaminating the product. Significant value is lost due to poor harvesting and threshing techniques. Yet simple intervention like tarpaulins for drying millet and simple threshers can greatly improve quality. Quality was also greatly impacted by storage facilities which could cause further deterioration due to pests, humidity, and other challenges. Transport to markets also led to deterioration due to poor transport methods and handling (e.g., carrying milk in non-food-grade plastic containers). This is further complicated if the value chain is fragmented, with many traders handling the product. One of the reasons for low attention to quality was that sellers were not paid on quality. The other challenge of quality is a more fundamental one as it is related to subsistence orientation of farming. It was observed that many farmers grew crops primarily for food and sold the surplus to markets. This meant that farmers grow varieties suited to their palates rather than varies that processors may want. For instance cassava farmers tended to shy away from cassava that have high starch content yet it is starch that industrial processors want. Farming practices employed by subsistence farmers also impacted on quality, for example rice farmers mixed rice varieties grown and since different varieties have mature at different times, the resulting rice of low quality.

In general the agricultural landscape characterised by low yields and poor quality of produce and also high prices that makes many of the agricultural value chains unable to support emergence of strong processing sectors. All the same interesting insights were obtained as there were many interventions being applied to address the challenges of farm systems. These are discussed.

2.2 Meeting the Challenge

While innovation that introduces new technologies e.g. high variety seeds that seems to be the focus of many interventions in agricultural value chains, equally important and probably more impactful is innovations in business model that can help re-engineer value chains and exploit potential synergies within and across synergies. Some important innovations in business approaches and models are discussed below:

a) Re-Orienting the Value Chain – Putting the Horse Before the Cart

Significant emphasis is put on production in particular increasing yields/productivity. The is reflected in government policy and increasingly expensive subsidies are a reflection of this

A market orientation is what is needed. Markets should drive the value chain support should be designed to address market demands. Poverty is not about increasing productivity at farm level (though important) but about upgraded value chains so that upgraded value chains provides jobs. As indicated before in high developed US agri-food value only 7% of the value is created on farm. The rest is logistics, input supplies, processing, marketing and distribution. The focus should be on how to unlock the potential downstream. It is not high yields that will lead to transformation, industrialization and jobs but rather upgraded value chains that can respond to existing an emerging market demands.

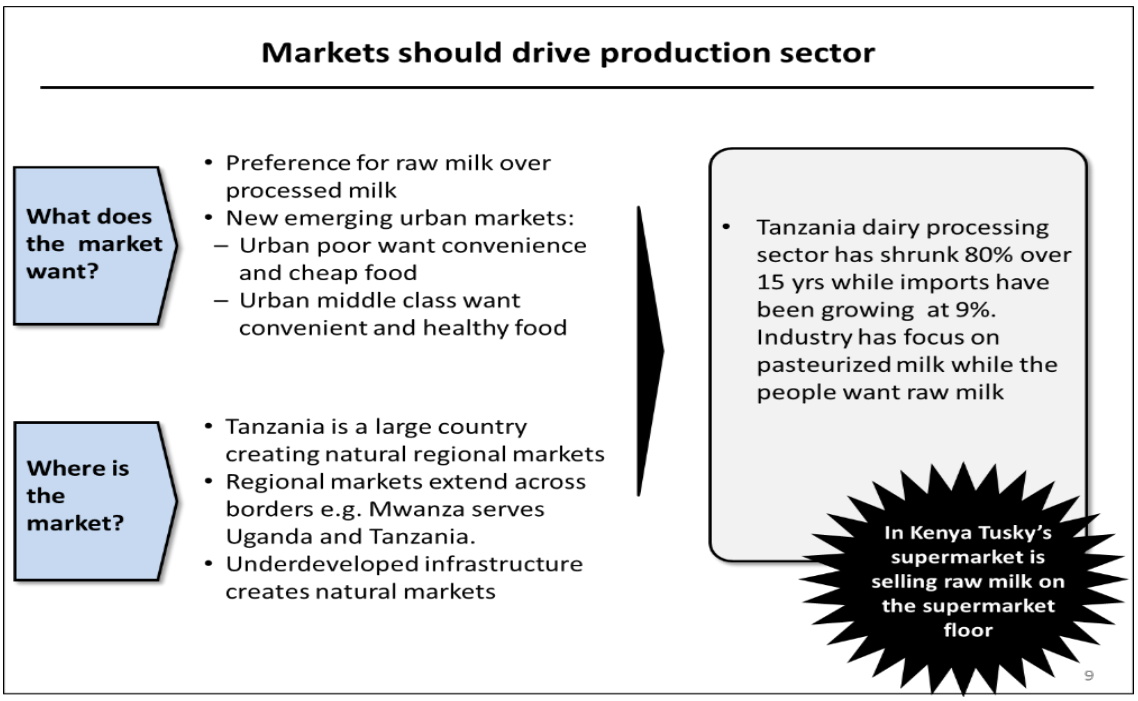
Markets are probably the most important determinants of the productivity and profitability of the value chain. Value capture through better markets may be more efficient than efforts at increasing farm-level productivity. Studies in Senegal have shown that local rice could fetch a 30% premium through branding and promotion, which is probably more efficient than trying to increase productivity by 30%. Therefore building the image of traditional grains like sorghum and millet should be a key part of efforts to increase their value, and agricultural policy should generally focus more on the marketing end of the value chain.

Market development should be considered more broadly, and regulation should follow markets. While moving from traditional markets to modern markets is key to increasing value, this need not pit modern products against traditional ones. We have seen a modern supermarket selling raw milk in Kenya, recognition that its consumers want that milk. Yet the policy of government has been to reduce the supply of raw milk in the market and shift towards processed milk. Markets, rather than policy, should decide what products are offered, and regulation should then follow to make sure they are provided safely.

The role of modern marketing channels, especially supermarkets, should be carefully thought out, as they will become increasingly important in shaping diets. Supermarkets can have considerable influence on what consumers purchase and can thus shape both the agricultural and the processing landscape. Due to their stringent requirements, smallholder farmers and artisanal/informal processors may not be able to participate in this process. Supermarkets are also influencing processing by producing supermarket brands through contract manufacturing.

Further, supermarket chains have a regional reach and can thus easily help firms access export markets.

Figure 3: Where are the Markets and What do They Want?



Source: ACET 2015

Markets are increasingly urban. 50% of agricultural produce in Africa is now sold in urban markets ( ). Urban markets are very dynamic, but they require some processing as urban dwellers who are pressed for time need food that is almost Ready-To-Eat (RTE).

Market are also becoming increasingly regional. This is particularly relevant for Tanzania as given its size and underdeveloped infrastructure natural markets for some regions are across the border. So Zambia, Mozambique, Malawi are natural markets for Southern highlands, Kenya is the natural market for North East Production region and Uganda, Rwanda, Burundi and Kenya for the North West region. There is significant potentials for developing cross-border value chains. So for instance rather that export sorghum to Kenya breweries for making beer Tanzania can export sorghum malt.

b) Re-Engineering the Value Chain – The Search for Synergies

Upgrading value chains is really about search for innovations and scaling them and also catalyzing the process of innovation. Many innovations that can be scaled,

many innovations out there that can be diffused and adapted to Tanzania. Fig shows innovations identified in our studies that have significant potential for upgrading the value chains.

i) Re-Engineering Production Arrangement

Rethinking Inputs Business Model

Inputs are key to improving productivity at farm level and thus guarantee supply. However high quality inputs are expensive and thus poor farmers who are risk averse tend to not use them. This situation is exacerbated by preponderance of fake inputs being sold in fairly unregulated as markets are dominated with many small traders that make it hard to police.

Our studies pointed to one way of making inputs more affordable is develop inputs services providers who can then supply a service e.g. a weeding service or planting service. The farmers need not buy any equipment or inputs. The service provider comes with inputs and necessary equipment to apply them. This can be particularly appealing to the youth who are being enticed to go into farming. Indeed in Nigeria which has been experimenting with this model using groups of youth known as “weed killers” equipped with knapsack sprayers and weedicide and provided with uniforms. They are well trained and provided with high quality inputs through direct links with inputs manufacturers. Note that in Ghana, mechanical services are provided as service through mechanization centres.

In Kenya a model to curb fake inputs and increase trust is being pioneered. Tis model is combining the power of branding and franchising model. Branding provides trust and since brand has value it also an asset that the owner protects. Franchising model allows one to increase reach without having to do significant capital outlay. This model can give the buyer a better guarantee as franchises are better supervise and have a reputation to protect. Bulk sourcing can also allow negotiating for lower prices. Perhaps rather that established input providers like Tanzania Farmers Association (TFA) that have a good brand and this trusted can focus on growing though a franchising model and focus on building brand and supporting and supervising franchise owners.

Towards a Holistic Farming Ecosystem

Focus on smallholder while important should not be at the excluding of the medium scale commercial farmer and even large scale commercial farmers.

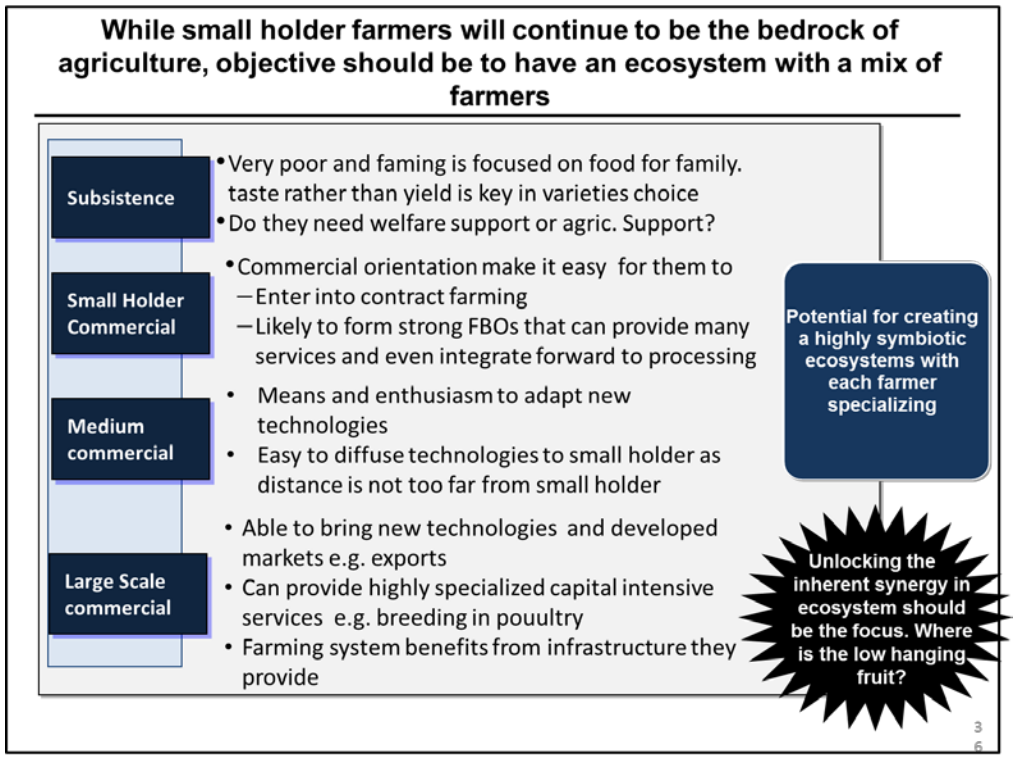
The all form part of an ecosystems that is well structured and link has potential for synergies by allowing specialization and thus higher productivity.

- In Kenya dairy sector a growing trend observed was that, large-scale farmers are moving towards specializing in breeding and moving away from milk production. They are now a major source of breeding stock for the smallholders. At the same time, smallholders have become highly specialized focusing on milk production only. Calves of both sexes are either reared for beef or disposed of immediately after calving. The farmers source replacement heifers from breeders, mostly medium- and large-scale dairy farmers. Each class of farmers is thus specializing and cooperating in a symbiotic relationship that is creating important synergies

- In Uganda Ranchers are also moving away from rearing beef cattle and focusing on fattening beef cattle obtained from pastoralists who can raise huge herd at low cost. However the cows are of very poor quality and require intensive feeding before being sold. Ranches can grow the needed fodder at their ranches. For instance, Banuti ranchers buys 100–300 immature steers from nearby smallholders in March, at the beginning of the rains, raises them on good-quality pasture, and sells them all after four months, at the end of the rains. Thus an ecosystem that has small holders, medium scale commercial farmers is beneficial to the sector as it allows for specialization based on strengths of each.

- In Uganda the emergence of medium scale commercial sorghum farmers has made it possible for small holder farmers to access modern faming machinery including harvester and threshers as the commercial farmers have made this available for hire.

Figure 4: Towards a More Holistic-Farming System



The key to emergence of this symbiotic ecosystem is medium sized farmer. The medium scale farmer is the glue to this system. The farmer has scale and capacity to interact and get technologies from large scale farmers (who in turn have capacity to diffuse high technologies from outside). At the same time they are closer to small holder farmers and can thus diffuse technologies and knowledge to them and also enter into contract farming with them. For instance, a medium-sized commercial farmer in Eldoret, Kenya, has experimented with breeding and feeding technologies, with impressive results. Beyond that, the farmer has started consulting to other farmers, thus becoming the vanguard of a dairy revolution.

Contract Farming – A New Kind of Contract?

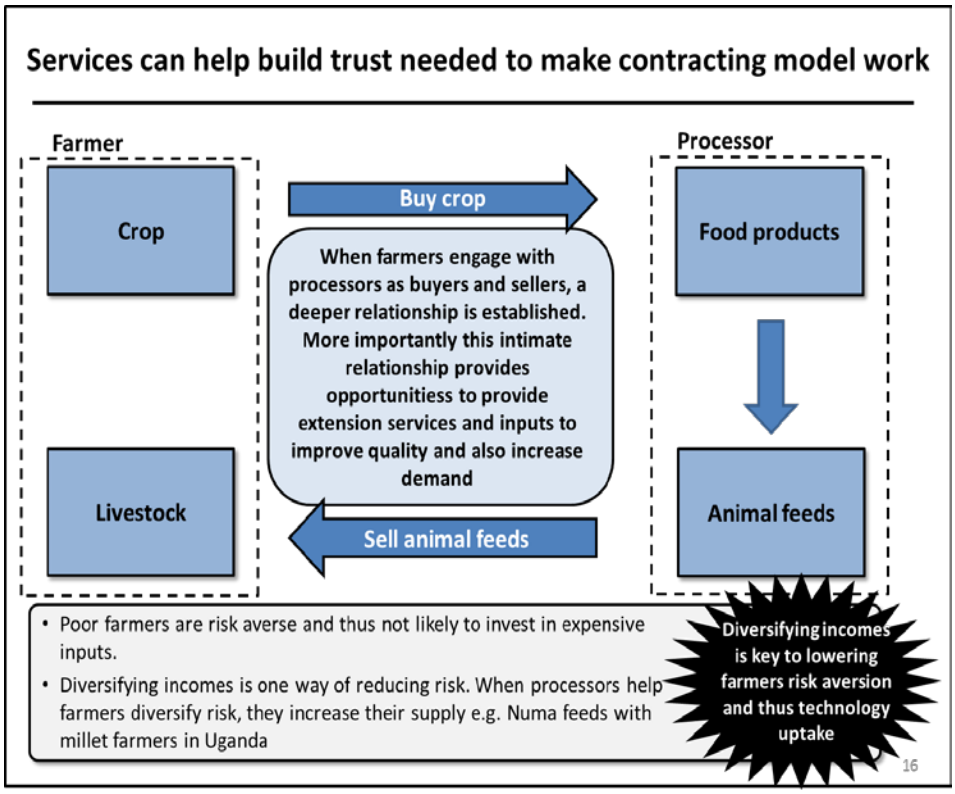
Contract farming is a way to guarantee supply for processors. However, contracting models are plagued with the challenge of side selling. Legal avenues to enforce contract can be very expensive and can also attract unwanted publicity[1] Trust is needed to guarantee ethical behaviours.

[1] Likely to be seen as a David and Goliath battle and processor however strong is likely to be seen has using his her power to trample small people

Integrating crop and livestock has many benefits for farmers. An example of this approach is the development of a livestock–sorghum where sorghum, dairy, and poultry industries are developed jointly. This can be particularly transformative in resource-poor communities that grow sorghum. *Striga* weed, a key challenge to sorghum production, however it can be effectively managed by intercropping with the *Desmodium intortum* plant, which also makes good fodder. At the same time, manure has been found to be very effective in increasing yields of sorghum, especially when combined with fertilizers. These are a few of the clear complementarities of combining livestock with sorghum and production.

More importantly is when processors support such a model it creates a strong contracting arrangement that overcomes trust challenge. When farmers sell millet to a processor and buy feed from the processor to support dairy and poultry production as happens with NUMA feeds in Western Uganda, it creates a symbiotic relationship. As farmers diversify incomes and smooth incomes (and livestock unlike crops can have a constant flow of money e.g. in dairy production) farmers are able to deal with small emergencies. At times farmers side sell due to emergencies that require immediate cash. The repeated transactions and interdependency creates trust which makes contracting models work. Further diversifying income also reduces farmers risk aversion thus increasing uptake of technologies and thus yields.

Figure 5: Towards a Symbiotic Contracting Model



Another model being applied to overcome the challenges of side selling and farmers growing non-optimal varieties is the block farming model used by Caltech in Ghana. Caltech contracting farmers on its own land and providing them with inputs and extension support. In this way farmers can grow the cassava desired by Caltech on its land and grow the cassava that suites their palates on their own land. Thus farmers can be subsistence on their land and commercial on the contracted land. Also the fact that Caltech is the owner of land reduces side selling as Caltech essentially owns the cassava.

i. Middlemen-From Bogeyman to Value Chain Upgrader

The challenges of poor road conditions that impede access to markets are well documented, but the challenges of a highly fragmented supply system with many brokers and actors have not received adequate attention. Some of these challenges are described below.

- Many small actors mean higher transaction costs, and since only so much cost can be pushed to consumers, the farmers tend to get less. The

tendency to demonize middlemen/brokers as exploiting farmers seems to result from a misguided analysis. The price difference from farm gate to consumer can indeed be very large (100%, in some cases), but this is often shared by up to four brokers, who also have to overcome the challenges of poor roads, adulterated products, spoilage, and other marketing risks. When all the risks are taken into account, each broker's margins are modest and can be very small, as observed in egg trading in Kenya, they can be as low as 9%.

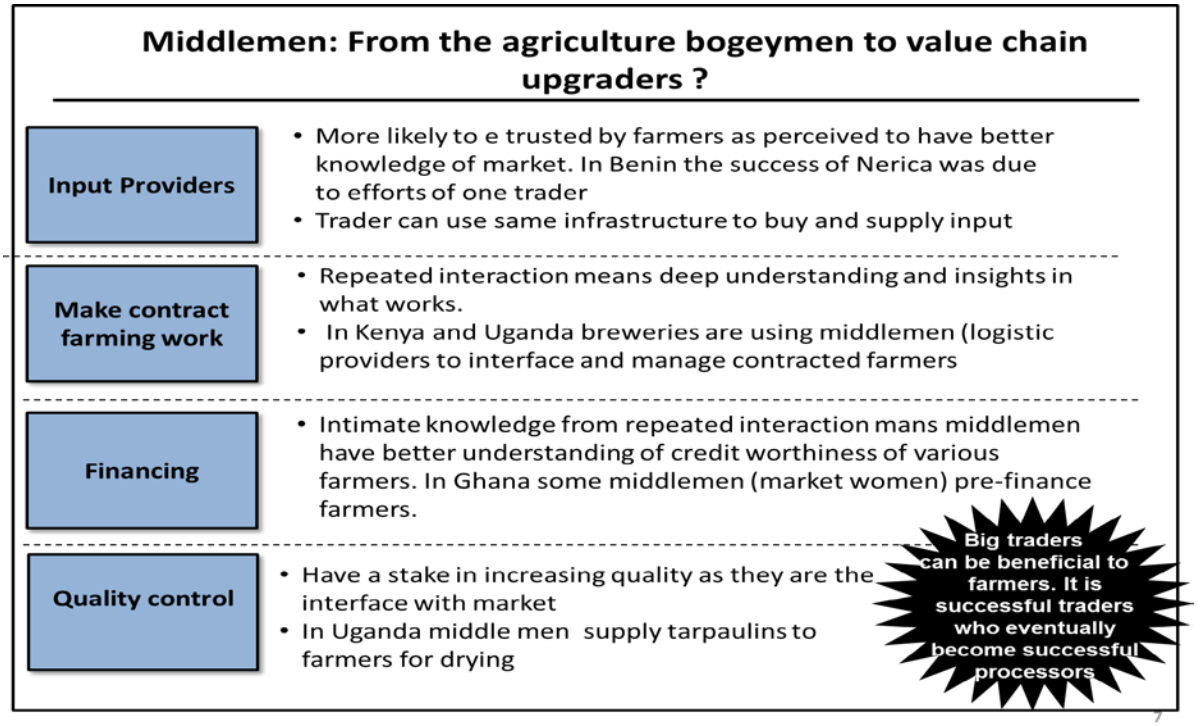
- Small brokers with a low scale of operations cannot invest in logistics to lower costs and improve quality. For instance, milk tends to be transported by bicycle, using plastic containers that are prone to contamination. Better-resourced brokers can invest in better transport modes,[2] aluminium containers, and even dry ice facilities to keep milk cool.

- It is also difficult to regulate and enforce quality standards among numerous small brokers. Cutthroat competition between brokers can lower standards and destroy trust in the system, which may also explain the low level of contracting in all value chains. Contracting can stabilize markets and reassure producers, thus increasing market participation, as well as increasing supply stability.

Middlemen are crucial to the functioning of all the value chains studied. The middleman coordinates finances and finds markets. He or she is the most entrepreneurial person in the chain and key to making it work. Therefore, concerted efforts to strengthen and upgrade the much-demonized middlemen may improve the functioning of the value chain and create value for all players.

[2] E.g., upgrade from bicycles to motorcycles and new motor transport systems.

Figure 6: Rethinking the Role of the Middleman



Note that the success in using sorghum to brew beer in Kenya and Uganda was tied to the development of strong, well-resourced logistics providers that handle bulking, quality control, provision of storage facilities among other services. These are essentially the upgraded version of middlemen. In Ghana rice value chain middlemen were the main source of financing for rice production. While Nerica rice success in Benin was solely due to efforts of a middleman who propagated the seeds and convinced farmers to take the new seeds. Middlemen are likely to convince farmers to take new technologies as they farmers believe they have critical knowledge of what the markets wants.

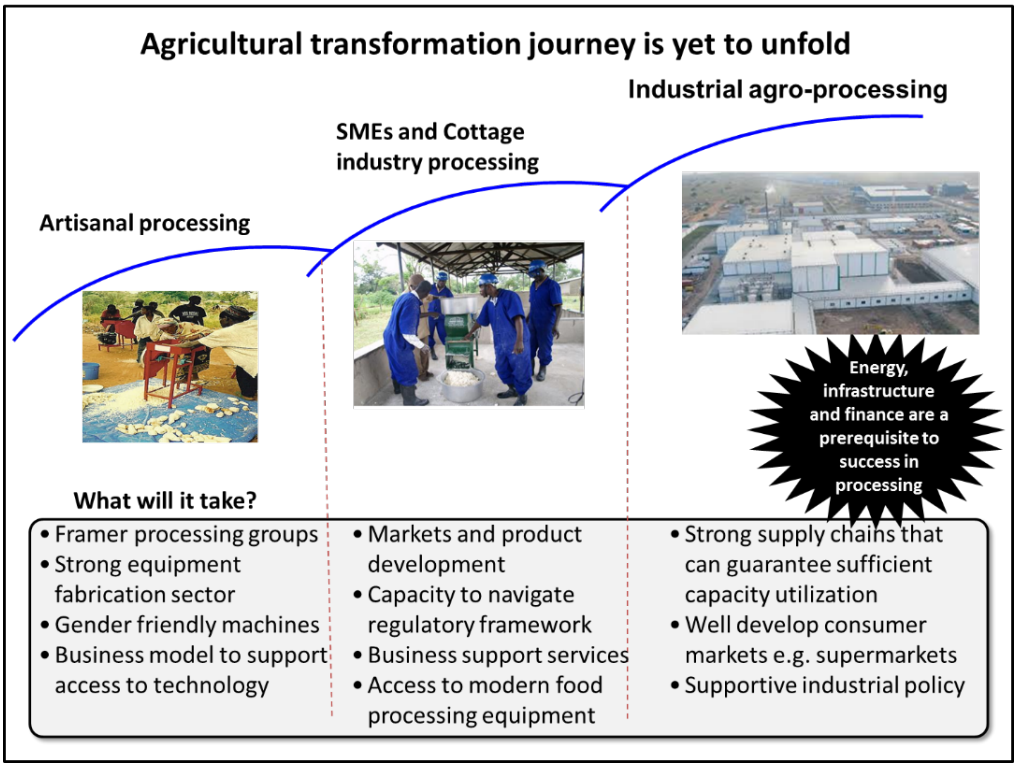
In many industries, powerful traders become processors once they have gathered enough resources, and tend to be very successful at it, as they understand the business and have built the needed logistics chains e.g. Pwani Feeds in Kenya. For crops like millet and sorghum, with many small traders-cum-processors-cum-retailers, the emergence of strong traders can do a lot to improve the value chain. The organic growth of traders should be deliberately promoted so they can scale up and transition into processing or input supply or farming—they may even become diversified entities that deal in all three, taking over the governance of production. The ultimate aim should be to develop them into commodity trading houses.

The business innovation models discussed above can go a long way in upgrading the value and providing the pre-requisites needed to support the emergence of a competitive processing sector.

3.0 TOWARDS AN AGRO-BASED INDUSTRILIZATION STRATEGY

Tanzania journey towards a strong agro-industrial sector is yet to unfold. Much of the processing is dominated artisanal and small scale processors, for instance 60% of rice is dominated by small scale processors (ACET 2015. The reasons for this have to do with the supply chains being under-developed as discussed. All the same a strong supply chain is just one of the necessary conditions. Industrial development requires energy, financing and the capacity (technical skills and managerial competencies) to run such undertaking. This takes time to build.

Figure 7: From Artisanal Processing to Agro-Based Industries



Thus Tanzania while is still a long way from having a vibrant agro-industrial sector that is powering the economy, there is much that can be done to leverage the vibrant artisanal and SME processing sector to address the emerging market in urban areas.

The aim is to have agro-industrial as the dominant sector in the long run, however in the short and medium term developing the SME sectors should be the focus. And this has actually been recognized. The vision of Tanzania as articulated in TDV 2025 is to have high productivity agriculture as a basis for a ***diversified and semi-industrialized*** economy. This acknowledges that the efforts must necessarily be focused on artisanal and Small and Medium Enterprises processing sectors. It is from the ranks of SME that agro-industrial powerhouses will emerge. Supporting organic growth is more sustainable that jumping straight into large scale industrial processing that past industrialization attempts did. Organic growth allows learning to take place and also more importantly allows winners to emerge who can then be further supported to scale up.

The growth of vibrant homegrown SME agro-processing sector is however not without significant challenges. The processing sector in Tanzania is highly challenged. Challenges identified in our studies included:

- Rudimentary and outdated equipment.
- Low capacity utilization. With typical utilization rates below 50% for cotton due to supply problems. In fact 13 dairy plants have closed in the last 15 years as volume processing has shrunk by more than 70%
- High energy cost and lack of energy supply guarantee
- Challenges with product development
- Challenges with financing

The challenges mean that processing sector is not competitive. For instance local rice prices are higher than international prices (Minot, 2010). All the same the artisanal sector and SME have shown dynamism. For instance smallholder farmer groups and SMEs have started producing High Quality Cassava Flour (HQCF) by taking advantages of improved technologies. This is allowing them to market quality cassava product in urban areas.

A strategy that focusses on upgrading and scaling up the artisanal and SME processing sectors is needed so that they can effectively address the emerging urban food markets locally and regionally. Our study points to some innovative arrangements have potential to further energize this dynamism. These are discussed

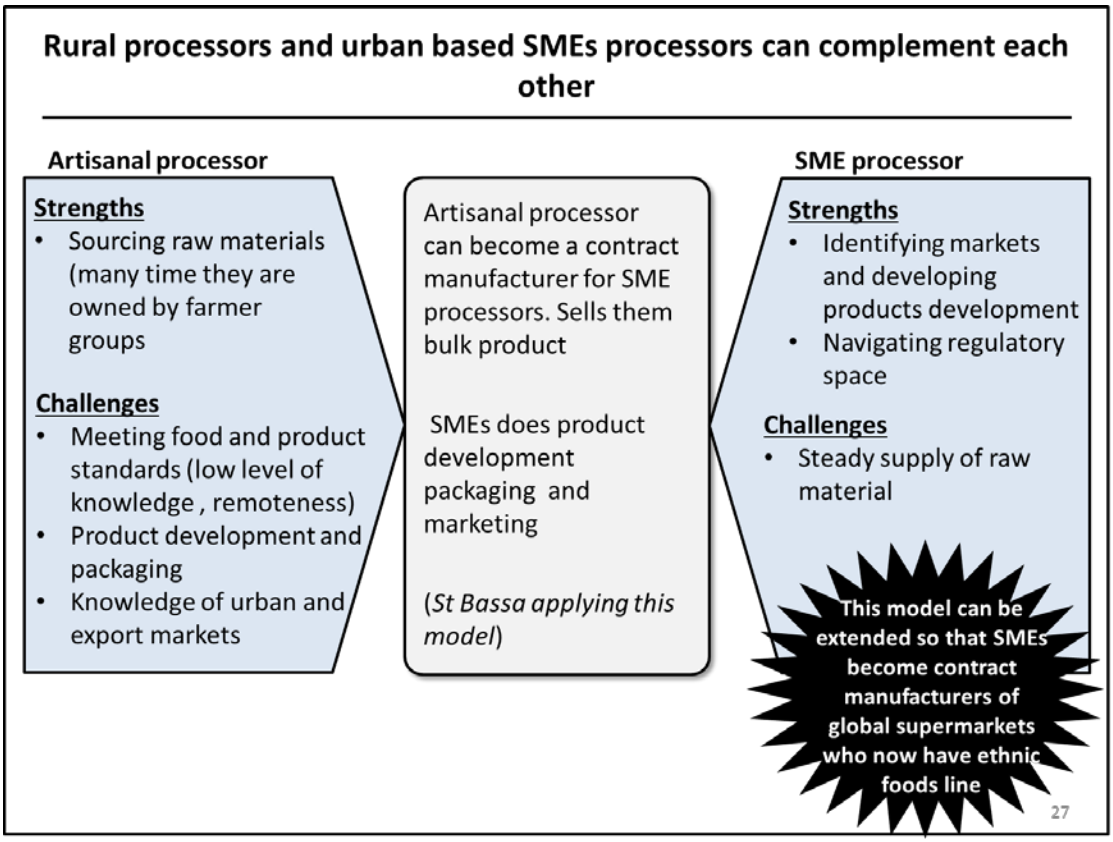
a. Artisanal + SME: Towards a New Processing Model

A model that is proving versatile in resolving the challenge is tighter integration between rural artisanal processors and urban SME processors. Rural processors have solved the problem of supply (as they are also farmers) but lack skills in product

development and navigating food marketing regulations. SME food manufacturers have the skills in market and product development and in managing regulations, but have difficulties in sourcing consistent supply. A model where an artisanal processor is able to supply in bulk a product to an SME, which then packages and markets, is mutually beneficial.

Adopting this model St. Bassa food manufacturers in Ghana has stopped souring cassava and now uses a women processing group based in rural Ghana to supply it bulk processed product (*gari*) which it packages and markets to African Store in Europe. It provides support to the rural processing group in meeting quality standards.

Figure 8: Artisanal + SME Business Model



There is a need to rethink policy on industrialization and provide incentives to strengthen these types of linkages. Tax breaks and subsidies on equipment should be extended to firms that have developed contracting models with rural processors. Going hand in hand with this should be support for marketing and branding, directing part of the agriculture budget to advertising firms to help promote products from the more innovative companies.

b. Toll Processing – Solving the capacity challenge

Having many manufacturing facilities with inadequate equipment and skills can be overcome through contracting manufacturing by a specialized entity. This means a high end and well-resourced facility that sell processing time to processors. This arrangement is called Toll Manufacturing. In Toll Manufacturing, one company provides raw materials (or semi-finished goods) to a third-party, who will then provide the rest of the services (manufacturing). Typically, the third-party company will already have particular equipment and organizational models in place, and they can supply subclasses of manufacturing processes for the first company for a fee – or toll. Because the customer only has a variable cost of manufacturing without the financial investment in equipment, facilities, and employees, the customer is able to develop the exact product they envision, without the time and capital investment of building a manufacturing operation. This also significantly decreases the time required to get the product to market, as lead times for ordering and installing new machinery are eliminated. This model is used in the wine industry in South Africa where small wine growers need not investment in machinery to bottle and label wine. The vineyard takes its wine to a shared facility where it is bottled, labelled and packaged.

Something close to toll processing is being practiced at artisanal level. Cassava processing is largely processed at processing centres where development partners and others provide machines needed to at a central location centre usually owned by a processing group mostly women. The women are farmers and they usually bring the produced to be processed at the centre and market the finished product on their own. This business model innovation is common in West Africa and is now being pushed in Tanzania. Where about 120 such centers exist (Abbas, 2013 cited in ACET 2015).

c. Contract Manufacturing – solving The Market Access Challenge

Though contract manufacturing is similar to toll manufacturing, there are some key differences between the two. Similar to toll manufacturing, contract manufacturing involves outsourcing production processes to a third-party company. In contract manufacturing, however, the third-party company hired to produce the goods is supplying the manufacturing process as well as sourcing all of the raw materials. Contract manufacturing is creating a supply chain vendor for a branded, private label or custom-made product. The contract manufacturer is responsible for making the product to specification and meeting the delivery time requirements. This offers the

customer a fast and effective method of extending their product line with minimal investment and a made-to-order supply program.

The key opportunity for Tanzania for contract manufacturing is Supermarkets sub-contracting. Processors can do better than just try to get product to supermarket shelves, which can be daunting especially for SMEs in terms of requirements by supermarkets in terms of volumes, quality, packaging and working capital. Processors can be supported to work with supermarkets to make supermarket branded products. This way processors have an easier access especially those ones coming up. Linking them to supermarkets can help them access capital as it gives them credibility and market guarantees and thus lowers their credit risk.

Regional markets provide an important opportunity to expand processing sector. Tanzania exports food informally to the region especially Kenya. The supermarket provides an opportunity to access the markets in a more formal way.

Medium Commercial farmers and Rise Cottage Industries

For medium scale commercial farmers are also bringing new dynamism in the rural areas by integrating forward through cottage industries. Cottage industries have the capacity to create both demand for products and off-farm employment in rural areas. They require less investment and demand much less of the high-level infrastructure needed to support more formal industry. Perhaps their biggest advantage is that they tend to grow organically as more successful farmers integrate forward to processing. An example of this trend is the rise of home-based cheese production in Kenya as box 5 shows.

This emerging industry bodes well for the dairy sector, as the cheese industry has the potential to absorb a significant amount of milk. With the right support, the fact that cheese can be made at home using simple equipment has important implications for rural development. The examples below are a testimony that medium scale farmers do have significant potential to drive rural transformation.

Box 1: Kenya's Emerging Cheese Cottage Industry

A dynamic cottage cheese industry is emerging in Kenya that can mop much of the milk that is lost during period of glut if scaled. Some of the more dynamic players are discussed below:

- The six-acre Brown's Cheese Farm is home to the only international award–winning cheese maker located in Tigoni, Limuru. Brown's cheese is renowned for crafting natural cheeses using traditional methods and ingredients, with no colorings, coatings, or other additives. On average, Brown's Cheese Farm buys its milk from over 3,000 small-scale farmers around Limuru. It also

has 25 cows of its own. Brown's cheese emphasizes that quality of milk is a key factor in making good cheese, and all incoming milk is first tested for quality, purity, and freshness. Brown's makes 15 varieties of cheese in small quantities, some of which may be aged up to 10 years. Brown's is also experimenting with new recipes, including a cheese made from traditional fermented *murzik*. Apart from producing cheese, Delia and Andrew Stirling, who own Brown's Cheese, also train chefs on recipes for different foods made with cheese. They are the key suppliers of cheese to a number of leading hotels and also supply to the leading supermarkets.

- Another interesting processor is Sammy Githogo, who accidentally went into cheese making as a way to use unsold milk from the family milk transport business. Through experimentation, he has created a cheese making business on his homestead that today supplies cheese to 13 hotels in Mombasa (where he has a cold room) and several hotels and international schools in Nairobi. His target is to expand to producing about 15 MT of cheese per month, and he believes the opportunity exists to grow even bigger. Sammy currently has a staff of five, and his factory provides income to a number of farmers in central Kenya and the Rift Valley.

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4.0 FINANCING THE VALUE CHAIN

Our field surveys found finance to be a critical challenge across the value chains studied. Banks are generally unwilling to lend to the agriculture sector. In Ghana, for example, the share of agricultural loans in the total loan portfolio of commercial banks was 6.1% in 2010.[3] Difficulty in accessing credit is not confined to producers and rural households; credit access is also severely limited for aggregators, traders, and processors[4]. The failure of credit markets to finance farmers has seen traders take on the role of financing to some extent. About 70% of rice farmers we surveyed in northern Ghana got their financing from traders.

The biggest challenge to agricultural sector financing is the high risk perceived by lenders, mainly due to weather events and pests. Beyond the perception of risk, lending to many scattered smallholder farmers can be very expensive using the conventional banking model. As a result, many smallholder farmers remain unbanked. Although microfinance has been the primary innovation to increase banking access for the poor, even microfinance has not been very active in agriculture. This is because its models are designed based on consistent loan repayments, while many farmers spend and receive at discrete times (during planting and after harvest, respectively), and thus require more flexible repayment plans that accommodate farming cycles.

[3] World Bank Agribusiness Indicators, 2012.

[4] Dalberg estimates that global demand for agriculture finance is $450 billion, but only 2% of this demand is met.

New Approaches to Agricultural Financing

Nevertheless, the rise of impact investing and social enterprises is starting to change the agricultural lending landscape. New models that are tailored to farming cycles are now being pioneered with success. One such model is that of One Acre Fund, which is providing value chain financing to smallholder farmers in Kenya. Some highlights of this model include:

- Partnering with a seed supplier, Sygenta, to ensure that farmers get quality seeds
- Importing fertilizers and developing a strong logistics operation to ensure that high-quality fertilizer reaches the farmers
- Pairing with an insurer so that farmers are protected against weather events
- Flexibility to allow farmers to keep their produce until the prices are right (as prices tend to fall or collapse immediately after harvest) and pay the loan only when they sell

These interventions guarantee that farmers reap high yields at good prices and thus secure a good income to pay back the loans. An evaluation of One Acre Fund's intervention in some sorghum-growing areas in Kenya showed a jump in productivity by almost 50%, from 15 bags to 22 bags per acre.[5].

Governments are also moving toward new lending models that eschew traditional agricultural banks, which have historically been plagued by governance issues due to the nature of political economies. Ghana has been innovative in establishing a special-purpose fund to lend to agriculture and support processing and export-oriented activities. The Export Development and Agriculture Investment Fund (EDAIF) was established[6] to provide financial resources for the development and promotion of agriculture related to the agro processing industry. It is funded by a 1.5% levy on all imports. The fund includes three accounts:

- The Export Development and Promotion Facility (EDPF), which supports the development and promotion of export products and provision of services to the export sector. Activities supported include product development and promotion, capacity building, market research, and development of infrastructure and export trade.

[5] Based on an interview with an M&E officer at the East Africa Value Chain consortium.

[6] First established as Export Development and Investment Fund (EDIF) by ACT 582 of 2000 to provide financial resources and assistance for the development and promotion of the export trade of Ghana, it was amended in 2011 and renamed Export Development and Agriculture Investment Fund (EDAIF) and mandate expanded to include the development and promotion of agriculture and related agro-processing industry

- The Credit Facility, which extends loans through designated financial institutions to individuals, corporate exporters, and producers of export goods that are eligible to access the facility.

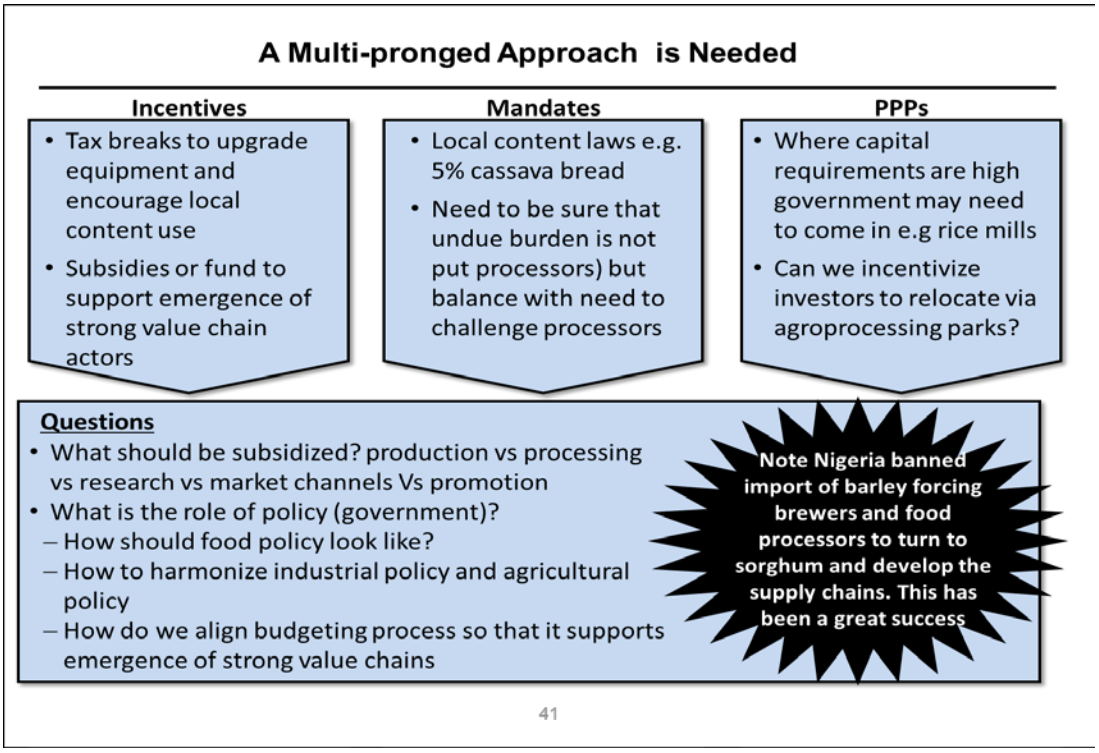
- The Agricultural Grant Facility, which supports individuals and institutions in the development and promotion of agricultural and agro processing products and the provision of services to the agriculture and agro processing sectors. Activities supported by the facility include product development and promotion, capacity building and research, and the development of infrastructure and common user facilities for agriculture relating to agro processing.

These innovations and other can provide new ways of thinking that governments can incorporate into their planning. More importantly governments can join hands with banks, social entrepreneurs/impact investors and development partners to channel the funds they use to support value chain actors through programs that are already working on the ground. This is likely to be more efficient than relying on government-run programs, which are prone to the inefficiencies associated with patronage and rent seeking.

5.0 POLICY FRAMEWORK

A policy framework that employs a range of tools is need to ensure opportunities are realized and a strong agro-processing sector arise.

Figure 9:Multi-Prolonged Approach



A value chain approach is needed so that policy does not address bottleneck in one aspect of the chain and create another in another part of the value chain. So if yields rise, will require that innovation in logistics so that products do not get spoilt and can get to processors. And processors must have the capacity to process the higher yields.

Policy should be about upgrading the value chain as whole nots part of it. So creating priorities and sequencing them so that bottlenecks are tracked and tackled appropriately. Policies should focus on making the markets drive the production as opposed to current focus on increasing yields as best manifested in providing fertilizer subsidies. Indeed interventions in Senegal show that a premium of 17% on local rice could be extracted though better branding.

Policy will need to include a mix of incentives, mandates and also public private partnerships. The mix and sequencing should be formulated on case by case basis depending on the value chain being addressed. For instance, mmandates for say

sorghum inclusion in beer can only work if the capacity on the ground is well developed. So it is ineffective to require supermarkets to source locally if the processing base is weak. Incentives are needed to build the base needed but there is need to incentives to be very well targeted and a clear exit strategy. Mandates can be imposed once sufficient capacity has been developed.

Public Private Partnerships (PPPs) may be used to develop processing capacity especially where significant capital outlay is required and risk is fairly high. The Toll Processing facility model discussed is good case for PPPs. For instance, if farmer organizations with support of government, social enterprise investors can create a toll processing where farmers in a region can share a processing facility.

The pathways identified here straddle agriculture and trade and industry policy domains. The critical role of agriculture in industrialization requires a more explicit platform to help coordinate efforts and align agriculture, industrial policy and budgeting process

6.0 CONCLUSION

There is an opportunity for an agro-processing industry based on emerging trends of urbanization and regional trade coupled with a rise of the supermarket. Value chains as they are cannot adequately respond to this opportunity without significant re-orientation and re-engineering of value chains. Options to improve supply chains have been discussed as well as strategies to upgrade SMEs.

Success along this pathway requires a strong farm production sector able to deliver consistent supply and consistent quality and at reasonable low price. However the subsistence sector that characterizes Tanzania agriculture is hard pressed to deliver this. Yields are low, quality is generally poor and rain fed agriculture and poor logistics means that supply cannot be guaranteed. Thus developing a strong agro-processing sector on the back of subsistence agriculture remains a challenge. All the same potential strategies for overcoming these challenges exist. The twenty agricultural value chain studies done by ACET across 5 countries (Burkina Faso, Ghana, Kenya, Tanzania and Uganda) points to a number of strategies including: (i) Supporting the emergence of medium scale farmers that able to develop cottage industries targeting niche markets that can over time become veritable food manufacturers; (ii) business model that link processors and farmers in symbiotic relationship can improve quality and guarantee supply e.g. a processor supporting both crop and livestock farming to guarantee steady income of farmers and thus reduce side selling of contracted crops; (iii) business models that can link rural based artisanal processors to urban based

Small and Medium Enterprises (SMEs); (iv) Developing SMEs to become contract manufactures for emerging supermarket chains that can open regional markets for SMEs providing a path for growth to regional and event global players.

For this to happen there is need for greater alignment of agriculture and trade and industry policies. At the same time there is need to rethink government and development partners support, from supporting farmers to a more holistic focus on supporting key value chain actors that can foster the emergence of the new value chain arrangements.

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