



Sustaining Agricultural Transformation in Nigeria: Challenges, Issues and Strategies

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ABSTRACT

Today, it is apparent that there has been substantial growth and transformation of agricultural industry in Nigeria. With the transformation appears to be driven by significant constraints, demands, and shifts that occur in the economy as development proceeds. On these premises, this paper reviewed the nature of agribusiness in Nigeria in order to identify constraints and inherent risks and challenges, and more importantly identify what drives the development of the sector. The paper through a review of literature and government policies and initiatives identified transformers to include need to ensure sustainable food security and make the country competitive in food production, diversify the revenue base, generate employment, reduce government involvement and high incidence of poverty in rural areas. To this effect the paper reiterated that strategies should be put in place to recruit more agropreneurs, de-risk and guarantee descent incomes and livelihood for actors in the industry, empowers marginal farmers to get out of subsistence, and provide major actors with information and knowledge to enable them produce for the market. The paper concluded that the most promising way to sustain the transformation is to make government supports, policies and private sector investments ensure mass production needed to address market demands and ensure agribusiness sustainability.

Keywords: Transformer, agribusiness, value chain, agropreneur, marginal farmers

INTRODUCTION

Globally, agricultural system has undergone a rapid transformation as new enterprises and actors have evolved and traditional farming operations have grown larger and more specialized. Although, the transformation did not happen overnight, but came slowly as a response to a variety of forces such as advancement in science and technology, development in other sectors of the economy, changes in consumers' preferences and taste, globalization, urbanization, growth in population and income etc. (World Bank/IFC/MIGA, 2011; Owoade, 2011). Gandhi (2014) observed that the transformation of agriculture to agribusiness in developing countries appears to be driven by significant constraints, demands, and shifts that occur in the economy as development proceeds. While Lans, Seuneke & Klerkx (2013) posited that the changes is as a result of the agricultural industry increasingly need to adapt to the vagaries of the market, changing consumer habits, enhanced environmental regulations, new requirements for product quality, chain management, food safety and sustainability.

Therefore, knowing something about how agribusiness came about makes it easier to understand how this system operates today and how it is likely to change in the future. Hence, in this paper, the nature of agribusiness in Nigeria was reviewed with the intention of identified inherent constrains and opportunities. Specifically, agribusiness transformers were identified while challenges to transformation were examined with the intention of suggesting strategies to make the sector more impressive, sustainable and competitive globally. This becomes necessary in the face of the government renewed efforts to

diversify the revenue base and make the country competitive in food and agricultural production, feed the increasing population of hungry people and generate employment and wealth in the sector.

Nature of Agribusiness in Nigeria

Agribusiness is simply the business of crops and animals production. Davis & Goldberg (1957) cited in Olayide & Heady (1982) defined agribusiness as the sum total of all operations involved in the manufacture and distribution of farm supplies, farming, and the storage, processing, and distribution of the resulting farm commodities and items made from them. Ricketts & Rawlins (2001) described it as consisting of profit-motivated enterprises involved in providing agricultural supplies and/or in the processing, marketing, transport, and distribution of agricultural produce and products. Roy (1980) cited in Gandhi (2014) defined agribusiness as the co-coordinating science of supplying agricultural production inputs and subsequently producing, processing, and distributing foods and fiber.

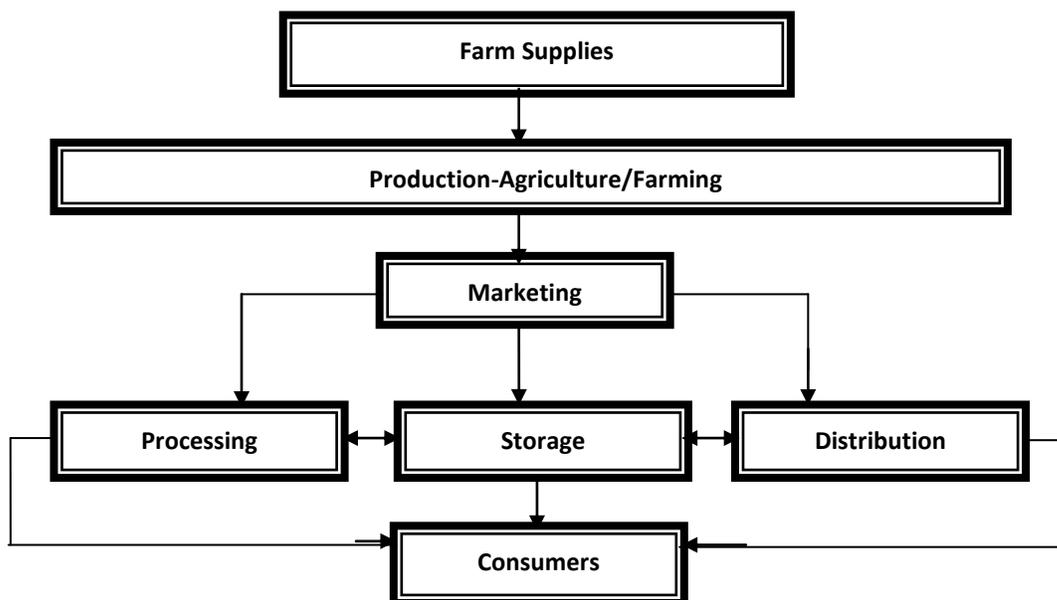


Fig. 1 Agribusiness aggregates

Source: Slightly Adapted from Olayide and Heady (1982)

Based on these descriptions agribusiness can be referred to as a generic term for the various activities connected with the generation of wealth in agriculture, and can be categorized into three aggregates of input supplies, farming and marketing as illustrated in figure 1. And the interconnected between the three aggregates is as shown in figure 1. Thus, for agricultural transformation purposes it is important to visualize these three aggregates as interrelated parts of a whole system in which the success of each part depends heavily on the proper functioning of the other two. Therefore, in this section the nature of each segment of agribusiness aggregates will be examined in order to identify inherent risks and challenges in each segment and more importantly to identify what drives the development of the sector. Hence, efforts will be made here to examine some of the important shifts and constraints that emerge, and the impact they generate and will continue to have on the economy, agriculture and agribusiness development.

Production-Agriculture Segment

Production-agriculture simply refers to a practice in which crops and livestock are produced with little or no processing. Primary crop farming provides employment for over 75 percent of the Nigeria labour force and the livelihood for over 90 percent of the entire population working in small holdings using simple farm tools (Adedokun, Akanni, Adedoyin, and Marafa, 2005). Again, crop farming together with

livestock provides a third of Gross Domestic Product (GDP) for the nation (Salami and Olorunfemi, 2005). All these emphasized the important roles of production-agriculture in the national economy.

Nigeria primary agricultural sector is largely subsistent, and dominated by small-holder rural farmers, whose majority of them engaged in traditional multiple farming, while the average yield of major staple food crops remains far below most of the other developing countries that share common economic indices with the country (FMA&WR, 2010). Unfortunately, growth in agricultural productivity has been held back in recent years by a number of factors- lacks of access to inputs, weather disruption, insecurity, and underinvestment in rural infrastructure and agricultural innovation as well as in research and extension (Owoade, 2017). Thus, food production has failed to keep up with population, making food imports necessary.

Hartwich, Kormawa, Bisallah, Odufote and Polycarp (2010) and Adeyemi (2011) observed that in recent time commercial farming has sprung up in response to existing market opportunities occasioned by change in government policies such as in grain and starch, animal feed, poultry, fish, fruits and vegetables and others. The authors further stated that although most of the medium to large-scale agricultural enterprises initiatives do not originate from entrepreneurs of the traditional sectors but reflect the investment strategy of already established business owners from other sectors to provide import substitutes and the urge of certain processors to assure the quality and quantity of primary materials, through vertical integration.

Although, crop production accounts for 98 percent of agricultural output, and the output of staples has increased in recent time but still unable to meet domestic demand. The principal constraint to the growth of the primary crop production segment has identified by Owoade (2011) is the fact that the structure and methods of production have remained the same, since independence, except for those farms that are located near irrigation facilities. Hence, risk minimization strategies of poor farmers owing to the limited availability of irrigation and the fact that much of the produce are used for home consumption have frustrated many efforts to introduce more profit-oriented models. To this effect, farmers stayed with the traditional production system, which provides limited potential for income and expansion of production (Hartwich, et al., 2010) with different farming systems and cropping patterns been identified within these farming systems based on vegetation types and land use practices (Olaniyan, 2000),

With regards to livestock production, ruminant production in Nigeria is largely characterised by extensive grazing practice, using mainly free range land and crop residue. Intensive ranching which depends on collected fodder is still largely undeveloped. However, there have been some modernisations lately following the establishment of cattle ranches and farms for intensive stock breeding, fattening and milking. Still the extensive nomadic and semi-nomadic cattle breeding where cattle and subsidiary livestock are moved about in search of natural pasture remains the dominant livestock farming system. Poultry farming on the other hand has changed tremendously from the traditional free range system to the modern intensive commercial poultry practice. The recent ban on the importation of poultry products, sophistication of consumers and income growth has added great impetus to this sub-sector but high cost of feeds still remains major constraint.

With regards to fishery, the major mode of fish production has been the peasant artisanal fish-mongering in creeks and coastal waters. Modern fish trawling and fish farming which in the past have remained relatively undeveloped is gradually gaining prominence. This is due to advancement in technology and the need to meet increasing demand for animal protein. However, the sophistication of the technology and capital intensive nature of this mode of fishing has reduced the number of participants in this venture.

In nutshell, Owoade (2017) identified the following characteristics to persist with respect to production-agriculture in Nigeria: Farming is predominantly semi-subsistence, with more than 80 percent of the total farm holdings below 6 hectares and usually on scattered holdings; Low level utilization of mechanization as farming activities are carried out manually mainly with traditional, rudimentary technology; Commercial and export agriculture plays a limited role in Nigeria, with large farm holders account for about 5 percent of all farm holdings while small holders constitute over 90 percent of the farming populace; The labour, management, capital and the bulk of resources used come from the same household

thereby constrain the expansion of production beyond and above the resources of the family; Low-level utilization of purchased inputs and improved knowledge and technology in production and post harvest handling, as access to formal credit sources is very low; and farming is still largely rain dependent, with farmers still exposed to weather vagaries and practice agriculture by dictate of the season.

Inputs Supplies Segment

Agricultural inputs supplies chain involved activities such as seeds, chemicals, fertilizers, drugs, vaccines, feeds, credits, farm machineries and equipments etc. production and supply. Although this segment is predominantly dominated by government with the government's role in the inputs markets essentially limited private sector participation. Unfortunately, government active participation had impacted negatively on the development of competitive agric-markets for input supplies, and made procurement and distribution of inputs through public sector agencies inefficient and ineffective (Hartwich, et al., 2010). An attempt to remedy the situation led to the introduction of Growth Enhancement Scheme (GES) and Anchor Borrowers Programme by federal government of Nigeria.

Meanwhile, for proper understanding the existing nature of major input supplies components will be examined one after the other.

1. **Seeds supply and distribution:** Specifically, supply and distribution of seeds is largely propagated by public and development agencies while private multiplication and distribution maintains a somewhat less prominent profile given the dominance of the public and development sector as well as the limited capacity of farmers to receive credits and purchase improved seeds.
2. **Animal and fish feed supply and distribution:** Commercial Feed Milling started in Nigeria in 1963 and has gone through various levels of modernization in terms of equipment and structural reforms. The Industry however, has not met up with local demand. Thus, the country increasingly relies on imports to meet the needs of an expanding livestock industry A review of the current status of the Nigerian feed industry showed that the industry is growing rapidly in recent years and has the potentials for both self-sustainability and commercial production (Udo & Umanah 2017). With regards to fish feed, there are few sources of commercial aqua feed in Nigeria as only specialized animal millers engaged in aqua feed production on demand, as such majority of aqua feed produced (69.75 per cent) are farm-made (Fagbenro *et al.*, 2003).
3. **Fertilizers supply and distribution:** Chemical fertilizers mainly imported to Nigeria while attempt by government to established factories to reduce the country's dependence on fertilizer imports turned out to be a failure. However, main reasons adduced for the failure of the private fertilizer production and distribution system include the lack of finance and insufficient capacity to reach small-scale farmers. Thus, the government procures and distributes, via private contractors, fertilizers to farmers annually at subsidized prices. Notwithstanding the subsidy, fertilizer use has remained largely inadequate and out of reach for small-scale farmers (Kormawa et al. 2002).
4. **Agrochemical supply and distribution:** The local production of pesticides and other agrochemicals is carried out by a number of local companies using imported inputs. The rest is imported directly and distributed by local distributors and/or international agrochemical company. As a result, prices of these agrochemicals are too expensive to the small farmers while wide adulteration has now become a menace to farmers.
5. **Vaccines production and distribution:** Currently the National Veterinary Research Institute in Jos is the only premier institute for animal vaccine production. There appears no veterinary drug manufacturing outfit in the country. Thus, all drugs are imported. Use of vaccines and veterinary drugs is sporadic among livestock farmers. It is somewhat more pronounced in the poultry industry where many small to large poultry farms use drugs and additives. These products tend to be more effectively distributed by the importers than other veterinary drugs.

Processing Capacity and Technology

Nigeria with immense natural endowment and diverse agro-ecological zones possess a great potential in agro-processing. Although, agriculture employs about 70% of the national workforce, formal activities in agro-industry, mostly food, tobacco and beverages, employ 1% of the total (direct and indirect) workforce and informal agro-industry employ another 3% of the total workforce, while industry purchases from farmers are likewise low, at less than 10% of output (Hartwich, et al. 2010). Indeed, many agricultural produce are sold in local or export markets with little or no value added through processing. The above provides some evidence for the statement that there is a large untapped opportunity for local, regional and international markets for processed agricultural products from Nigeria.

In Nigeria, two major groups of processors were evident, the artisanal (small and medium scale) and industrial (large scale) processors with each of them confronted with different constrains. The artisanal processing sector is dominated by women and characterized through rudimentary or intermediate level household as well as privately owned small-scale commercial milling, baking, and production and transformation technologies (Adeyemi, 2005). Products from these are majorly used in household recipes and often do not leave the village while the product gets sold mostly in its raw, unprocessed status only when farmers produce a surplus, thereby leaving little scope for local processors to grow. Meanwhile, a significant quantity of farmers' harvest rot because of lack of storage and processing facilities (FMA&WR, 2010), but quite often, farmers are forced to sell their crops when prices are lowest because of a combination of problems of preservation, processing and financial leverage.

Processing of agricultural produce on a larger scale is location specific. Depending on the bulkiness or perishability of the produce, certain industries will locate rather close to the origin of production or closer to the centre of trade, distribution, or export. Constraints from poor road, energy, water supply and telecommunication infrastructure, government bureaucracy and lack of business support services stifled the development of the sector (Olaoye, 2014).

Meanwhile, constraints to full blown agro processing industry in Nigeria as identified by Hartwich, et al. (2010), Adeyemi (2011) and Olaoye (2014) include: (1) Competition from cheaper products abroad and lack of competitiveness; (2) Unfavourable cost structures due to inappropriate technology, lack of knowhow and unskilled work-force; (3) Inadequate and inconstant supply of primary products of sufficient quality, particularly producers of staple crops may choose to not deliver when they see other opportunities for local sales and consumption; (4) Inconsistent government policies with regards to food processing industry; (5) Poor infrastructural development; (6) Insufficient application of quality standards, in consequence, not meeting the demands of consumers and international buyers; (7) Insufficient development of transport and storage facilities that avoid damage, contamination or perishability of products; and (8) Paucity of working capital among the various actors in the value chain.

Nature of End Markets and Trade

The current marketing system for agricultural produce in Nigeria is largely devoid of any government interventions. The markets for traditional food products are characterized by fluctuations in supply, with supply and demand determine product prices. Individual traders carry out marketing and they operate freely in both rural and urban markets.

The channel of distribution for agricultural produce and products in Nigeria varies for different commodities and from one location to another. Meanwhile, common marketing channels for food commodities include three alternatives: a) The movement from the producer through the rural collector to urban markets, retailer and end consumers; (b) The movement from the producer to a rural market where transporters carry them to urban markets and wholesalers who pass the product to retailers and consumers, and (c) The movement from the producer to larger buyers who directly process or prepare for export. Meanwhile, inefficient transportation system, non-access to market and marketing information and poor storage facilities had been reported to impact negatively on the sector (Owoade, 2017).

Recent Trend in Local Consumer Behavior

Nigeria population is about 200 million with this population being the largest domestic market for food and other agricultural produce in sub Sahara Africa. Lately a shift of local consumer behaviour with regard to food can be witnessed. Even less well endowed rural and urban households have become aware of the high costs of lengthy and cumbersome preparation of raw foods at home, and those who find less time for it look for semi-processed food products, street vended and even fast-food solutions they can just purchase. Also, concern for healthy and nutritious foods has affected consumers demand and preferences for food products.

Meanwhile, the market for semi-processed foods products increases due to industrialization and demand for import substitutes (Adeyemi, 2011). For instance, cassava, maize and sorghum are used increasingly as partial substitutes for wheat in bakery, biscuit and pastry industries as well as raw materials in the beverage and brewing industries, while household consumption of these crops has resulted in their limited availability for industrial use. Thus some industries now engage in direct primary production and contract farming of cassava, maize and sorghum in order to meet their requirements.

Agribusiness Transformers in Nigeria

Undeniably, it is apparent that there has been substantial growth and transformation of agricultural sector in Nigeria, and the trend witnessing is synonymous with patterns in other economies. For instance, an analysis of objectives of recent agricultural development policies and initiatives such as Nigeria's Agricultural Transformation Agenda (NATA), Nigerian Incentive-based Risk Sharing System for Agricultural Lending (NIRSAL), Nigerian Strategy Support Programme, (NSSP) Anchor Borrower Programme (ABP) and Economic Recovery and Growth Plan (ERGP) revealed that needs for agricultural transformation in Nigeria were not too different from the ones identified by Gandhi (2014) to be responsible for agribusiness growth and transformation in India.

Then, the following were identified as agribusiness transformers in Nigeria after an analysis of recent government development initiatives, and trend and pattern of transformation.

1. Need to improve productivities to cater for the increasing population and income growth.
2. Need to address problems of malnutrition and ensure sustainable food security.
3. Availability of markets, urbanisation and increasing commercialisation of agriculture.
4. Need for change in scale and reorganisation of production and marketing to diversify the economy and save foreign exchange.
5. Need to modernize agriculture and reduce the increasing food import bill.
6. Need to tackle youth unemployment and bridge the increasing generational gap within the sector.
7. Changing food consumption pattern and demand for quality and convenience.
8. Need for rural development, stem rural-urban migration and reduce high incidence of poverty in rural areas the agricultural base of the country.
9. Need to make the country competitive in food and agricultural production in the face of globalization, market liberalization, and Information and Communication Technology (ICT) revolution and reduce government involvement.
10. Need to sustain the economy in the face of dwindling oil revenue
11. Need to ensure sustainable environment and land management
12. Need to increase the proportion of the price paid by end-consumer that is retained by the nation for products she produced (through increase market access and efficiencies along the value chain and expansion of local value added agro-processing).

Constraints to Agribusiness Transformation

Over the years, and despite purported massive investments by governments at all levels into the agricultural sector, there are not enough transformational successes to boast about Nigeria's agriculture. Generally, the reasons as stated by Owoade (2011) include: lack of visionary leadership, incompetence, policy somersault, a complete absence of project follow-through, a propensity to divert public funds and

resources into private use, and lack of a strong commitment to find a sustainable way to provide small-scale rural farmers access to seeds, fertilizer, small-scale irrigation and credit. The author also found near inexistence of crop insurance to protect farmers from drought, flood, and bumper yields that cause prices of farm produce to fall sharply, lack of long-term investments in agriculture and its related infrastructure (such as decent roads to move crops to market, on and off- farm processing and storage facilities for preserving harvest) to be important constraints to agricultural transformation. In the same vein, Oloaoye (2014) identified challenges to sustainable agricultural development in Nigeria to include poor level of collaboration between research institutes and actors in the industry, inadequate farming enhancing facilities and financial support, poor policy formulation and implementation, preponderance of small holders, and rural-urban migration among others.

Also, Kolawole (2014) generally observed that programmes and policies meant for national development and transformation were not successful, in spite of quantum of money that had been invested, because they were all post-school in nature and design, and Nigerians had to learn them after they have left the school system. To make transformation sustainable, the author recommended proper integration of transformational policies and programmes into all levels of educational system, considering the fact that educational institutions are the places where the contact of the society is more.

Summarily, the following are a few identified impediments to sustainable agricultural transformation in Nigeria after a critical analysis of the performance of transformational initiatives and processes and related literatures.

- i. Poor implementation of various policies and initiatives, such as NATA, and NSSP, targeted to boost Nigeria's agriculture sector as well as to attract investors and develop participation of the private sector,
- ii. Non-harmonization of efforts of various agencies responsible for agricultural development programme.
- iii. Non-access of rural smallholder farmers to finance to take advantage of profitable packages of technology to boost productivity and take them out of subsistence.
- iv. Poor infrastructural facilities (poor road and electricity) especially in the rural areas, the agricultural base of the nation, is still a major challenge.
- v. Limited or non-access to markets, marketing information (such as knowledge of market prices, available volume and projection of future demand and supply, information on branding, certification and recognized standards for products) and business capacity among small holder rural farmers and local processors.
- vi. Concentration on production-agriculture instead of the development of the entire value chain.
- vii. Inadequate irrigation facilities, making farming in the country to be still rain dependent most especially in the southern Nigeria, and make farmers idle during off-season.
- viii. Inconsistent in government policies in the food and agricultural sector.
- ix. Inadequate supply and high cost of inputs which had limited their adoption and subsequent impact on yield and productivity.
- x. Lack of appropriate on-farm and off-farm storage and processing facilities.
- xi. The existing land tenure systems had limited land availability for commercial farming, would be farmers, women and the landless.
- xii. Climate change/unsustainable agricultural practices, which often manifest in the forms of soil degradation, crop failure and reduced farmers' productivity.
- xiii. Attitude of the populace, especially youth, to agriculture resulting in massive movement of able-body men and women from rural areas, the agricultural base of the country
- xiv. Inadequate number of extension men and women, with the few ones that are in place lack mobility to improve on extension-farmer contact while women extensionists are few to handle gender issues.

CONCLUSION

The prospects for achievement of impressive agribusiness in Nigeria are good considering the diversified ecological conditions, abundant land and water resources for production-agriculture of any kind, and large domestic and international markets for agricultural commodities. Again, with about 70 percent of its 200 million populations engaged in one form of agricultural activities or the other, the food and agricultural sector presented opportunities to create wealth and diversify the economy. With the huge untapped potential for agribusiness in Nigeria offers the best prospect for addressing the complex socio-economic challenges presently confronting the nation.

Today Nigeria is facing two key gaps in agriculture which offered actors in the sector opportunity to create wealth, inability to meet domestic food requirements and inability to export at quality levels required for market success (FMA&RD, 2016). The former problem is a productivity challenge driven by an input system and farming model that is largely inefficient. As a result, aging populations of farmers do not have enough seeds, fertilizers, irrigation facilities, crop protection and related support to be successful. The latter challenge is driven by an equally inefficient system for setting and enforcing food quality standards, as well as poor knowledge of target markets. To these effects, a comprehensive and strategic investment to reduce important constraints, in particular, the inadequate supply of required agricultural workforce, inputs and machineries, non-access to market and poor infrastructure become imperative.

RECOMMENDATIONS

- Transformation of agricultural education curriculum in schools to foster agriculture workforce or farmers of tomorrow rather than agricultural graduates looking for job becomes imperative. Specifically, agricultural education must be made to position the recipients to be competitive globally and learn about the complexities of agriculture through proper knowledge of the value chain. Recipients of agricultural education must be empowered to grapple with emerging challenges (such as a fast changing and more critical consumers, resource scarcity, climate change, globalisation), and find their opportunity to contribute as leaders and participants.
- As in many other developing countries, women and small rural holder farmers (marginal farmers) play a major role in agriculture but they face major obstacles to increasing their productivity and living standards (Owoade, 2011; Okunlola & Owoade, 2017). Then, they should be listened to and actively involved in evolving strategies to empower them to produce for the market and increase income generating ability. To this effect, reinvigoration of farmers-extension nexus is essential, as actors in the value chain should not only be consumers and users of technologies but should also be active participants in designing, testing, adapting and introducing them to the value chain, and then they must be listened to.
- New agribusinesses must be established and supported. For this reason pipelines of agropreneurs are needed to establish agribusinesses, and adopt technology and innovation to modernized agriculture and make the nation competitive in food production (Owoade, 2017a). This recruited agropreneurs must be supported to produce for the market and increase income generating ability through increased yields, alternative crops and improved access to inputs, land, irrigation and on and off-farm storage and processing facilities, markets, information and finance.
- For success in global markets, agricultural value chains must move products from production to the consumer or market more efficiently, with better quality and/or in a unique variation different to value chains in competing countries or location. Therefore, efforts must be redoubled to improve rural infrastructure such as access roads, electricity, water supply, as well as irrigation, storage and processing facilities. Again, major actors in the industry must be provided and equipped with information and knowledge about the existence and requirements of fringe/export markets (branding, certification and recognized standards for

- products) through training and workshop. These are to ensure that products are produced for intended markets and traded fairly.
- Since, agriculture is sensitive to climate change, sustainable agricultural transformation must focus on empowering rural small holder farmers, who are in the majority, through an effective educational and extension programme to maximize their outputs and sustain the production system through adoption of environmentally friendly, drought resistant crops and water efficient agriculture. This is the key to boosting small holder adaptation to climate change and ability to rehabilitate degraded land, and ensure sustainable production system.
 - Agricultural education and research should be reinvigorated and supported to engage in rapid design and development of systems and technologies that are flexible, reversible, affordable and appropriate for local environment, as new knowledge and technologies are needed in order to adapt to a changing economy and culture. This is to enable farmers, agribusinesses, and even nations innovate continuously and cope, compete, and thrive in the midst of global transformation witnessed in the sector.
 - Finally, it is the incentive in the value chain that encourages private sector sustains investments in production, infrastructure and services and oils the wheel of progress for the industry. Hence, in an attempt to successfully transform agricultural sector the policy makers must realized that actors in the agricultural value chain are driven by incentives namely, profit, prices, commissions or some other extrinsic factor. Therefore, sustainable strategies and policies should be put in place to de-risk and guarantee descent incomes and livelihood for actors in the industry.

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