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Prospects and Challenges of Large Scale Commercial Poultry Production in Nigeria

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Abstract: Poultry outnumbers all other forms of livestock in Nigeria and not surprisingly is found throughout the country wherever there human settlement. The main poultry production system in the country can be generally differentiated into 2 groups, namely; subsistent and commercial. This study restated the findings of previous studies that majority of poultry in Nigeria are kept by subsistence farmers. Inspite of the immense contributions of the poultry industry to the national economy, the subsector is facing challenges such as poor quality of ingredients used in the manufacture of feed, supply of poor quality chicks, high feed costs, inadequate access to and high cost of veterinary services and poor marketing information systems amongst others. These factors, to a large extent, have slowed down further growth of the sector. Impetus on development of commercial poultry production can be facilitated by public private partnership. This would ensure sustainability of poultry enterprises, provision of capital subsidy by government in form of periodic grants to poultry farmers and core infrastructures. Government should provide financial assistance to subsistence and small-scale poultry farmers in form of soft loans. It should also give them tax concession. Poultry waste management system under commercial production should be properly designed, built and maintained in order to protect both surface and underground water quality.

Key words: Poultry, livestock, production, farmers, water quality, Nigeria

INTRODUCTION

Agriculture continues to be the most important sector of the Nigerian economy in terms of provision of employment albeit its contribution to the nation's foreign exchange earnings is relatively low compared with that of the oil and gas sector. About 35% of the GDP, out of which the livestock farming sub-sector accounted for about 10 and >38% of non-oil foreign exchange earnings of the country are contributed by the agricultural sector. In terms of the provision of employment, about 75% of the populace depends on agriculture and agro-based businesses for their livelihood (CBN, 2007). Poultry which is generally considered as is domesticated fowl kept primarily for meat and eggs includes the chicken, turkey, guinea fowl, pigeons, ostriches, pheasant, quail, peafowl and swimming birds such as duck, geese and swans. Nigeria's livestock resources include 13,885,813 cattle; 34,453,724 goats; 22,092,602 sheep; 3,406,381 pigs and 104,247,960 poultry. The researchers also reported that traditionally managed stock is >85% for selected species while commercially managed ones is highest for chicken (13.8%) and to a lesser extent for pigs (3.24%) as shown in Table 1, while Table 2 showed Nigerian livestock population estimates. Table 2 showed that of all indicated livestock reared in Nigeria, chickens are the most populated, common and widespread.

Table 1: Livestock population in Nigeria

Species	Total	Traditionally managed (%)	Commercially managed (%)
Cattle	13,885,813	99.50	0.50
Goats	34,453,724	99.97	0.03
Sheep	22,092,602	99.84	0.16
Pigs	3,406,381	96.76	3.24
Chicken	72,400,856	86.17	13.83

Table 2: Nigerian livestock population estimates

Species	Number
Chickens	82,400,000
Goats	34,500,000
Sheep	22,100,000
Cattle	13,900,000
Donkeys	900,000
Horses	200,000
Camels	90,000
Other poultry*	31,900,000
Pigs	3,500,000
Dogs	4,500,000
Cats	3,300,000
Rabbits	1,700,000
Guinea pigs	500,000
Giant rats	60,000

*Includes pigeons, ducks, guinea fowl and turkeys; FAO Corporate Document Repository in 2010

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Poultry outnumbers all other forms of livestock in Nigeria and, not surprisingly, is found throughout the country wherever there is human settlement. Although, pigeons, ducks, guinea fowl and some turkeys are also widely kept, chickens are by far the most common. Typically they are maintained under traditional, low-input, free-range systems of management but substantial numbers are also reared intensively on a commercial basis, particularly in the Southern states. Commercial holdings account for some 10 million chickens or 11% of the total estimated population of 82.4 million. There was a boom in intensive chicken production in the early 1980s when the government subsidized the prices of day old chicks and feed ingredients. The subsidies have since been withdrawn. Indeed, almost every household owns chickens which provide a valuable source of supplementary protein and income.

The poultry sector is characterized by relatively faster growth in consumption and trade volume than many other agricultural sector. Economic and nutritional importance of poultry cannot be overemphasized as poultry provides man with companionship, fibre (feathers) and food in the form of egg and meat. It provides direct employment for a large number of rural and urban people and indirect employment to suppliers of products and services such as grain farmers, feed mill operators as well as those producing various goods and services used to support poultry production and marketing activities. Poultry products are comparatively inexpensive sources of animal proteins. For example, units of egg or heads of spent layers which sell for low prices can be afforded by people in the average and even lower income bracket. In terms of nutrition, poultry production contributes to nutritional food security. Poultry meat is a good source of high quality protein and contains iron, zinc and B-complex vitamins except folic acid. It contains a well balanced supply of minerals including calcium and phosphorous, especially if the bones are eaten. Chicken egg contains most of the constituents of nutritional importance to man and egg is a rich source of vitamin D, retinol, riboflavin, iodine and protein.

In one form or another, chickens are kept in all parts of Nigeria because there are fewer religious or social taboos associated with them than there are with pigs and some other animal species. The products produced by or derived from chickens provide acceptable forms of animal proteins to most people throughout the globe. The biological cycle is much shorter and the investment in individual birds is much less than those of other livestock. The compatibility among breeds of birds is also good and chicken particularly are productive in terms of egg and meat production.

POULTRY PRODUCTION SYSTEMS

As in most developing countries, the main poultry production systems in Nigeria can generally be differentiated into 2 groups, namely; subsistent and commercial. The commercial system can be further classified into small-, medium- and large-scale with modern technology. Small-, medium- and large-scale enterprises vary in size from 100-20,000, 20,001-50-000 and >50,000 birds, respectively. Under the subsistence production, birds are mostly of indigenous breeds that roam the homestead and scavenge for feed freely. In the commercial production system, exotic and high producing birds are kept under intensively care and given complete feeds. According to Shaner *et al.* (1982), the term small-scale refers to those operations in which the farmers frequently have difficulty obtaining sufficient inputs to allow use of the technology available to medium- and large-scale farmers. Small-scale enterprises are found mostly in the rural villages where production inputs are difficult to obtain and marketing outlets are not well organised. In contrast, large-scale enterprises are concentrated along the highway and in urban as well as peri urban areas where there are access to production facilities and marketing outlets.

Subsistence poultry production usually comprises of stocks of heterogeneous breeds, mixed strains, different types and ages. Resources input under this system are not organised and marketing or consumption of birds is done on ad-hoc basis. Family members provide labour but no conscious efforts are made to determine the cost-benefit ratio of operation. Indeed, most households in Nigeria regard poultry keeping merely as a traditional or cultural activity. The low resources input and bio-security levels of backyard production result in sub-optional productivity of birds. Similarly, the economic incentive of backyard production is unattractive and this hampers the prospects of expanding existing poultry businesses as well as attracting new entrants.

The resources input and marketing management under the commercial production system tends to be similar to those of large industries in the non agricultural sector. It is usually capital intensive because of the cost and high level of technology involved. Interestingly, it is also labour intensive because of the need to support automated devices with direct human labour, especially in critical times of mechanical failures. Stocks of birds kept are the highly productive modern breeds.

Poultry production scales and systems have been classified by FAO into 4 operational sectors (Table 3). The 1st sector is the industrial integrated system with high level of bio-security. This includes farms that are part

Table 3: FAO classifications of poultry production systems

	Poultry production systems			
		Commercial (Bio-security)		
	Industrial and integrated	High	Low	Village or backyard
Sector (FAO/definition)	Sector 1	Sector 2	Sector 3	Sector 4
Bio-security	High	Mod-high	Low	Low
Market outputs	Export and urban	Urban/rural	Live urban/rural	Rural urban
Dependence on good roads	High	High	High	Low
Location	Major capital and major cities	Smaller towns and major cities	Smaller towns and rural areas	Everywhere dominates in remote areas
Birds kept	Indoors	Indoors	Indoors/part/outdoors	Out most of the day
Shed	Closed	Closed	Closed/open	Open
Contact with other chickens	None	None	Yes	Yes
Contact with ducks	None	None	Yes	Yes
Contact with other domestic birds	None	None	Yes	Yes
Contact with wildlife	None	None	Yes	Yes
Veterinary service	Own veterinary	Pays for veterinary service	Pay for veterinary service	Irregular, depends on govt. vet., service
Source of medicine and vaccine	Market	Market	Market	Government and market
Source of technical information	Company and associates	Sellers of inputs	Sellers of inputs	Government services
Source of finance	Banks and own	Banks and own	Banks and private	Private and banks
Breed of poultry	Commercial	Commercial	Commercial	Native
Food security of owner	High	Ok	Ok	From ok to bad

Table 4: Major features of the four production sectors

Major features	Sector 1	Sector 2	Sector 3	Sector 4
Integration scale	High and full	Medium	Minimal/nil	Nil
Grand parent stock	Yes	No	No	No
Parent stock	Yes	No	No	No
Hatcher	Yes	No	No	No

of an integrated broiler production enterprise with clearly defined and implemented standard operating procedures for bio-security. The 2nd sector is commercial poultry production system with moderate to high bio-security. This sector includes farms with birds kept indoors continuously strictly preventing contact with other poultry wildlife. Marketing of birds and other products under these sectors are well organised. The 3rd sector comprises production systems with low to minimal level of bio-security. Birds and other poultry products are usually sold directly to the live bird markets and local glossaries. This sector includes caged layer farms with birds in open sheds and farms with some birds spending time outside the shed. The 4th sector is the typical household or backyard production with minimal bio-security. Poultry meat and eggs are hardly sold. They are consumed by the households especially on occasions considered to be important to them. Table 4 provides additional information on the distinction between the 4 sectors in the Nigerian context.

MIGRATION FROM SUBSISTENCE TO LARGE COMMERCIAL SCALE PRODUCTION

The majority of poultry in Nigeria is kept by subsistence farmers. This is one of the reasons why the country has not been able to meet the protein needs of the populace and therefore the massive importation of animal protiens in an attempt to bridge the gap between demand and supply. In order to enhance domestic meat supply, there is the need for migration from subsistence to large commercial scale livestock production including poultry. Already, the migration in the poultry sector is being driven by many factors such as growing population, economies of scale of production, new technologies and human capacity building. According to FAO (2008), backyard poultry production systems can offer a useful entry point for development programmes to address extreme poverty and food insecurity. There is no doubt that troops of backyard poultry farmers should be encouraged to enter into production system because it will postively impact on the aggregate meat and egg output. However, subsistence production should not be considered as a terminus. Rather, such farmers should be empowered tecnically and financially to progressively migrate along the different scales of production from subsistence towards industrial production system. Fortunately, several factors within and outside the poultry sub-sector provide opportuninies for farmers to do so. Some of these are as follow:

The population of the country is growing steadily. This implies that there are more people to feed with high

Table 5: Consumption of meat (including poultry) and egg in selected countries (kg/capita/year)

Country	Meat	Egg
USA	124.0	14.5
Spain	113.1	13.9
Canada	101.1	10.8
France	99.9	16.0
Malaysia	54.0	14.4
Japan	42.4	19.2
Britain	76.3	9.2
South Africa	33.2	6.3
Libya	32.7	9.4
Israel	68.3	11.9
Tunisia	23.9	7.3
Zambia	11.0	3.9
Egypt	22.6	2.1
Sudan	21.1	1.2
Nigeria	8.1	3.5
Algeria	18.7	3.5
Morocco	18.5	5.2
Chad	15.4	0.5
Cameroon	15.1	0.7
World average	37.9	8.0

quality such as meat and eggs. The data for consumption of meat (including poultry) and egg in selected countries as shown in Table 5 indicated that the consumption of meat (including poultry) and egg per capita annually for Nigeria is 8.1 and 3.5 kg, respectively. These figures are lower than the world average of 37.9 and 8 kg, respectively (FAOSTAT, 2002). It is, therefore, necessary to give impetus for commercial egg and poultry meat production and to further enhance domestic consumption of the products. Any effort to increase egg and poultry meat production and consumption will go a long way in contributing to the achievement of the Millennium Development Goals (MDGs). This should also be considered as another opportunity for poultry farmers to migrate from subsistence to higher commercial production.

Consumer's food habits and preferences continue to change from time to time. This has further expanded the frontiers of opportunities for commercial processing of poultry products such as powdered eggs, liquid eggs and pre-cooked meat products.

Food crisis, in many African countries, partly occasioned by drought and political quagmire, provides opportunities for migration from subsistence to commercial poultry production with a view to exporting the products to those countries.

Availability of new proven technologies which enable poultry farmers to take advantage of economies of scale.

Potential source of organic fertilizers. Proper poultry wastes management under commercial production is an asset. For instance, poultry wastes are about the most important source of plant nutrients for crop production.

Feeding programmes in public and private schools has become fashionable in Nigeria and some other West African countries such as Ghana. This has further expanded the potential market for poultry products.

CHALLENGES TO COMMERCIAL POULTRY PRODUCTION

In spite of the contributions of the poultry industry to Nigeria's economy, the sub-sector is facing challenges of further growth. For example, there are many road blocks in the process of migration from subsistence to commercial poultry production. Some of these are follows:

Poor quality of ingredients used in the manufacture of feeds: Many of the raw materials are not properly processed and handled some others are adulterated. Adejoro (1991) stated that frequently moisture content, aflatoxin level and other microbial contaminants of raw materials are never evaluated prior to purchase and use the manufacture of poultry feeds. Consumption of such feeds by birds often results into serious health problems, depressed productive (in the case of broilers) and reproductive performance (in the case of layers). In extreme cases of contaminated feeds high mortality often occurs.

Supply of poor quality chicks: This is a major source of sub-optimal production and reproductive performance of flocks in the country. The problem is often acerbated for the fact that poor quality chicks are not always realised early enough until considerable level of costs has been incurred in raising the chicks. Reddy (1991) observed that there is no strict and compulsory quality control measures either in the hatchery or in the market in most developing countries.

High feed costs: According to Adeyemo and Adeyemo (2009), overall ranking of the problems militating against commercial egg production in the Southern Guinea Savannah indicated that finance was highest (96.6%) followed by cost of feed (91.5%). This study was in agreement with that of Agro-Ind (2002) which identified general high cost of animal feed as a threat to the poultry industry in Nigeria.

Inadequate access to and high cost of veterinary services: A large number of backyard and small-scale poultry farmers, especially those in the rural areas do not have easy access to veterinary clinical services. Some of those in the urban and peri-urban centres who do even hesitate

to avail themselves of the opportunity to use the services because they cannot afford the financial implications.

Poor marketing information system: It is often perceived that there are potential markets for poultry products. However, there are no comprehensive empirical data to support effective demand and this makes proactive intervention, production as well as marketing planning to be somehow difficult.

Inadequate slaughtering, meat and egg processing facilities: There are very few meat and egg processing facilities within the country whereas there is need for such in order to encourage large commercial poultry production.

Inadequate and sometimes outright lack of basic infrastructure such as roads, electricity and water supply: The need for poultry farmers to make provision for infrastructure where they are not available, often discourages migration from subsistence to higher scales of commercial production.

Wide gap exists between local demand and supply of Grandparent Stocks (GPS): One of the attempts to solve this problem is importation of GPS and the eggs for hatching. Unfortunately, this exercise has been carried out indiscriminately and without following strict legislative control. Consequently, there have been reported cases of outbreaks of diseases that either were not known or did not exist in the country.

Inadequate poultry: Inadequate poultry extension services due to general shortage of Agricultural Extension Agents.

Concerns about environmental pollution: One of the major challenges of commercial poultry is waste management. Large quantity of poultry waste is inevitably generated on continuous basis in commercial production to the extent of the intensity of operation. The waste, if not managed properly, can be inimical to human health and the water quality. For example, bacteria in poultry wastes can contaminate drinking water and may cause potentially serious illnesses. High levels of nitrates (A form of nitrogen that develops naturally in poultry wastes) in drinking water may particularly harm unborn or young infants and young livestock. Nutrients in poultry wastes that enter streams also may lower oxygen levels and kill fish and other wildlife.

Source of conflicts: Repugnant odours from commercial poultry operations, especially when the wastes are not properly managed, has often been found to be a major source of conflict within communities in cases where the enterprise is located within or near residential areas.

FACILITATING ROLE OF PUBLIC PRIVATE PARTNERSHIP

The initiation and impetus on large scale comercialization of poultry productio can be facilitated by the Public Private Partnership (PPP). PPP is basically an innovative and modern approach to delivering (public and/or private) services as well as infrastructure/ programme development by combining efforts of the public and private sectors. It places emphasis on value for money, wholesome demand, cost-saving and providing quality services in a sustainable way. Public private partnership, if well coordinated will facilitate the process of migration from subsistence to large scale commercial poultry production as follows:

Ensuring sustainability of poultry enterprises by enhancing the skills and capacities of farmers. This may be achieved through capacity building workshops provided to private farms by agricultural extension workers whose salaries are paid by the government.

Increasing private farmers' access to the unique expertise and competent professionals in the public service such as veterinarians in government owned veterinary clinics.

Expanding the scope of beneficiaries of government interventions targeted at commercial poultry farms. This includes various quarantine services, diseases and pests control programme undertaken by federal, state and local governments.

Sharing business operation costs and promoting synergy in poultry enterprise development. This happens when for example, a government puts in place standard poultry meat and egg processing facilities and then hands over the management of such facilities to stakeholders in the private sector. The private agency or an association managing the facilities may then charge concessionary rates for their use. Revenues derived from the charges will be used to maintain the facilities.

Making productive use of idle assets: For example, there are several uncompleted and even completed buildings, abandoned by federal, states and local governments in locations across the country. Such structures could be handed over to various organisations in the poultry sector for use as feed mills, meat and egg processing plants or storage houses.

Provision of core infrastructure, notably, energy, water, roads, health centres, educational institutions and housing by government. This will encourage the

expansion of existing small-scale poultry farms and the establishment of new ones. Transition from subsistence to commercial production implies that more meat and eggs will be produced. In cases where the local markets have less capacity to consume the products, there would be need for basic infrastructure for processing, storage and transportation to urban markets.

Provision of capital subsidy by government in the form of periodic grants to poultry farmers. This will to make commercial poultry production to be more attractive to new entrants into the venture. In some other cases, the government may support commercial poultry projects by providing revenue subsidies including incentives on tax.

Implementation of feeding programme in schools. State governments should provide adequate funding to enable food contractors to fortify school lunch packs with animal proteins. Contractors on their part should be sincere in the preparation and supply of the right quantity and quality of animal protein such as eggs to pupils. This will drive the demand for poultry products which in turn will increase the impetus on migration from subsistence to large commercial scale poultry production.

Provision of actuarial support services by the federal government. Government should encourage migration from subsistence livestock farming to large scale commercial poultry production by providing comprehensive insurance cover for their livestock. This will encourage the expansion of farm production and thereby, further contribute to the achievement of self-reliance in animal protein production. Indeed, this is one of the expected role of the government under the public private partnership approach to the development of the livestock sub-sector.

CONCLUSION

The study shows that there has been a steady increase in the demand for poultry products in Nigeria due to several factors such as increase in population, urbanization, disposable income and export drive. These have led to the establishment of many new poultry farms, the expansion of existing ones and the resuscitation of some others which had stopped production. Today, poultry production is one of the fastest growing sectors of agricultural production in the country.

RECOMMENDATIONS

Government should provide financial assistance to subsistence and small-scale poultry farmers in form of soft loans. This will help to prevent the decline of the sector as a result of unprofitable operations or increase in the prices of its products. It will also tend to keep down the ever rising cost of living, especially in urban centre. Furthermore, it will encourage the expansion of poultry businesses and indeed, massive migration from subsistence to commercial production. This will go a long way in contributing to the achievement of self-reliance in animal protein production. The federal, states and local governments should give poultry farmer's tax concessions as a form of protectionism. The primary objective of doing so is to make domestic poultry products artificially competitive against imports.

The amount of poultry waste generated from commercial chicken production increases with the intensity of production (Adeyemo and Adeyemo, 2009). Poultry waste management system under commercial production should be properly designed, built and maintained in order to protect both surface and underground water quality. At a minimum, animal waste lagoon, storage site or land application area should be at least 30 m from any well or other water source and preferably farther away if possible. Poultry waste land applications also should be 300 m or farther from other residential and office accommodations. Any poultry wastes being transported on public roads should be covered to avoid possible dispersal and poll.

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