



Catering Services and the Poultry Industry Value Chain in the Niger Delta

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EXECUTIVE SUMMARY

This report was commissioned as part of an initiative of the Partnership Initiatives in the Niger Delta (PIND) Foundation's initiative to promote inclusive economic growth inside the Niger Delta. Its objective is to analyze the value chain for poultry products inside the Niger Delta, and to identify avenues where actions can be taken to facilitate the Niger Delta poultry industry to attain its economic potential in the production of chicken meat and eggs.

The poultry industry contributes 10% to Nigeria's agricultural GDP, and engages approximately 20 million people through direct and indirect employment. Similar to other developing economies in Africa and Asia, the sector can be split into commercial production and traditional or rural poultry production. Chicken is the dominant form of poultry, and accounts for over 90% of the sector. It can be split into two categories – traditional breeds which are used in backyard poultry production, and exotic (or high yield) breeds used in commercial production. Backyard poultry production is done with the objective of providing meat and eggs for household consumption, as well as an occasional source of income. Meanwhile, commercial production is explicitly for the commercial-scale sale of meat and eggs. In 2010, the total poultry population stood at 192 million according to the FAO, and it is estimated that 40% of this was commercial. This analysis estimates a total bird population of 33 million in the Niger Delta, resulting in commercial production of 23,000 tonnes of meat and 53,000 tonnes of eggs.

The analysis begins with building an understanding of the size and dynamics of key markets that consume poultry in the Niger Delta. Four major market segments have been identified. These include catering companies, fast food outlets, household consumers, and hotels. This means an overall estimated annual market for chicken meat worth \$35.2 million, \$43 million, \$120.5 million, and \$1.78 million respectively, within the various segments. It also means an annual estimated market for eggs worth \$5.1 million, \$236,000, \$163 million, and \$378,000 respectively.

The purchasing patterns of each market segment reveal valuable insights about the consumption of meat and eggs. First, catering companies consume processed

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chicken meat, which is obtained from large commercial suppliers outside the Niger Delta, due primarily to standards requirements. Their supply of eggs is primarily local, provided by small-medium scale suppliers, often through distribution agents. The majority of fast food outlets tend to follow a similar purchase pattern; they procure meat from commercial suppliers, and eggs from local dealers. Third, household market demand (by far the largest overall category), is met by a combination of commercial and traditional sources of meat and eggs. The main supply source for birds at the household level live-bird markets, which are manned by retailers and supplied by distributors and small-scale poultry producers. Finally, hotels have a mixed purchase pattern, with larger brand names consuming commercially produced chicken, while smaller brands procure chicken from live bird markets. They procure eggs locally.

The trends in these markets are encouraging for the local producers. In the catering company segment, the increased recognition of the importance of local content means increased opportunities for the supply of locally processed chicken meat. The fast food segment is enjoying a period of robust growth (the national fast food industry is estimated to be growing at over 40% per annum), leading to significantly increased opportunities for the producers of poultry meat inside the Niger Delta. The household segment is also growing, with demand for meat and eggs between 2000-2009, having increased 20% and 18% respectively. In the hotel segment, it is unlikely that there will be a significant increase in demand, given the levels of instability in the Niger Delta.

Moreover, the analysis of these four end markets segments reveals that amongst the three sophisticated segments – catering companies, fast foods, and hotels, most of the meat demand is for processed meat, and it is met by commercial producers based outside the Niger Delta, in southwestern Nigeria. The rationale for this pattern is that these large-scale commercial producers are able to ensure timely delivery, adequate processing, packaging, and quantity of supply. The consumption pattern in the household end-market is somewhat different, as they are supplied by live bird markets, and in semi-urban and urban areas, also by imported chicken meat. As for eggs, procurement is primarily local, and done through networks of distributors which cater to the various end markets.

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The poultry industry is supported by several services supplied by related market systems. These include financial services and insurance, feed, veterinary services, vaccines, and extension services.

A number of factors are driving the increasing demand for poultry products, both meat and eggs, which bodes well for producers of all sizes. The major forces driving this change include increases in per capita incomes, population, and urbanization. These are correlated with an increase in chicken consumption, which is preferable to other meats for health and price factors. Other important driving forces include rising fast food consumption, relative stability inside the Niger Delta, a price-cushion created by historical instability, seasonal demand, ban on imports, and increased knowledge amongst farmers.

The analysis has identified several opportunities for market expansion and improved efficiency (for meat and egg producers) inside the Niger Delta. Within the household market segment, this includes the opportunity to increase sales by bringing down the price of meat and eggs, respond to egg shortages in December and January, and engage in the local production and marketing of day-old-chicks. Within the fast food end market, the market expansion is a clear indicator of a potential proportionate increase in requirement for chicken meat, creating an opportunity for broiler producers to increase sales. If successful in increasing sales to catering companies, broiler producers inside the Niger Delta could also look toward the fast-food end market.

However, capturing these opportunities requires producers to overcome the constraints they face. These pertain to both the core poultry market system, as well as the overall enabling environment. First, there is a lack of information amongst small and medium-sized producers about the quality standards and quantity requirements of catering companies and fast food outlets. Second, there is an absence of large-scale, reliable hatcheries inside the Niger Delta, which forces farmers to buy more expensive day-old-chicks (a key input) from outside the region. Third, the cost of feed is high and rising. Since it accounts for an average 70% of the direct costs of poultry production, this means a direct increase in final product costs. Lack of access to agricultural finance is also a hindrance, along with the capital investment costs of processing and cold storage facilities. Other constraints include weak infrastructure, weak enforcement of the ban on imported chicken,

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limited availability of drugs and vaccines, shortage of skilled farm staff, and weak cooperation amongst industry actors. In addition to overcoming these constraints, improvements in product quality, operations, and brand quality will be required for producers to begin taking advantage of the market opportunities available.

The poultry sector inside the Niger Delta currently presents concrete opportunities for increased economic benefits for local poultry producers, and an opportunity for the oil and gas industry to increase local content through catering companies. A future vision would see local producers of poultry upgrade meat quality and capacity to increase supply to sophisticated end markets (catering companies, fast food, and hotels), and increase the efficiency of egg production. In the case of the former, this would require producers to make investments to ensure that they can supply quality broiler meat which is packaged and processed, on a consistent basis. A future vision for egg producers would see the utilization of increasingly efficient operations, and greater cooperation amongst egg producers to address structural constraints which keep them from reducing prices.

In conclusion, several elements would be required to come together to enhance competitiveness of the poultry value chain inside the Niger Delta and ultimately enable it to take advantage of end-market opportunities which are on the horizon.

- First, increased investment, preferably by the private sector, into setting up integrated broiler-production operations which can create a local supply option for catering companies, fast food outlets, and other institutional buyers, as well as increase the local production of quality DOCs.
- Second, an improvement in the availability and decrease in the price of DOCs , initially through more organized purchasing agreements between hatcheries in southwestern Nigeria and producers inside the Niger Delta, and eventually through increased private investment in setting up hatcheries within the Niger Delta.
- Third, gains in overall farm productivity, to be achieved through improved use of feed (ideally, a reduction in the cost of feed), disease prevention, higher yield breeds, business management, and improved collective coordination through representative, well-functioning business associations.
- Stronger enforcement of import controls on poultry

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- Increase in indigenous production and availability of vaccines and veterinary services
- An improvement in the access to finance for competitive poultry producers.

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ANALYSIS OF THE POULTRY VALUE CHAIN IN THE NIGER DELTA

THE NIGERIAN POULTRY INDUSTRY

The poultry industry contributes 10% to Nigeria's agricultural GDP, and engages approximately 20 million people through direct and indirect employment.¹ Similar to other developing economies in Africa and Asia, the sector can be split into commercial production and traditional or rural poultry production. Commercial production ranges from small-scale businesses to large integrated poultry farms. Rural poultry is reared for subsistence purposes and most rural households in the country keep some form of poultry, usually chicken. Chicken is the dominant form of poultry, and accounts for over 90% of the sector, though it also includes turkeys, ducks, geese, and guinea fowls.

Chicken can be further split into two categories – traditional breeds which are used in backyard poultry production, and exotic (or high yield) breeds used in commercial production. Backyard poultry production is done with the objective of providing meat and eggs for household consumption, as well as an occasional source of income. Meanwhile, commercial production is conducted with the explicit purpose of the commercial-scale sale of meat and eggs.

The production of commercial chicken began in Nigeria in the late 1950s, when egg farms were established in the west of the country.² At the time, broiler meat was not popular, and the market preferred the tougher chicken meat from local varieties and old layers. The scale of the industry remained small at the outset, with only two

1 (Odeh, 2010)

2 (Akinwumi, Okike, & Rich, 2010, p. 8)



government-owned hatcheries set up by 1970. Gradually, Nigeria began importing poultry inputs, which led to rapid growth of the industry. By 1983, over 40 million commercial birds, supported by 874 feed mills were reported.³

However, the commercial sector collapsed in 1986, when Nigeria subscribed to the World Bank's Structural Adjustment Programme. Under this programme, the Naira was devalued massively, making poultry inputs (which were largely imported) unaffordable, reducing competitiveness. The imports of several key poultry inputs, including DOCs, feed components, vaccines, and equipment were also banned. These actions reduced the commercial poultry population to 10 million birds by 1988. Successive governments since then have maintained some form of restriction on the import of poultry and related products. The ban on the import of commercial poultry has actually provided support for the domestic production of commercial poultry, which has recovered since 1988. Meanwhile, backyard poultry, common across rural households has grown steadily, providing a stable supply of chicken meat and eggs to a large proportion of the population.

Overall, the demand for poultry products in Nigeria has continued to grow over the years, fueled by a high population growth rate of 2.55%⁴, increasing per capita income, and increasing urbanization.⁵ While the commercial industry is growing, it

3

Ibid

4 (CIA, 2012)

5

(Anderson & Gugerty, 2010, p. 1)

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does face significant challenges which must be addressed for the industry to meet its true potential. Some of these include:

- High input costs
- Limited supply of day old chicks (DOCs)
- Need for improved processing and marketing
- Health hazards due to lack of bio-safety precautions
- Inadequate availability of vaccines
- Weak production skills by farmers, exacerbated by poor extension services
- Lax implementation of import controls for frozen chicken meat
- Fragmented and ineffectual industry associations

The economic potential and benefits for food security of the Nigerian poultry industry are widely recognized. While the sector remains a focus of the Nigerian Government and the international community, progress in stimulating growth in local production has been slow.

NATIONAL POULTRY POPULATION

Over the last decade, the sector has staged a recovery, and the commercial chicken population has again been on the rise. The FAO states that the population in Nigeria in 2010 was approximately 192 million, as shown in Figure 3. This number includes both traditional and exotic birds. A 2010 DFID-FAO sponsored study estimated that approximately 40% of the overall population comprised of commercial birds, while traditional birds made up the remainder. The study put the commercial poultry population in 2008 at 64 million birds, divided between 24 million layers, and 40 million broilers.⁶

6 (Akinwumi, Okike, & Rich, 2010, p. 8)



Nigeria: Chicken Population

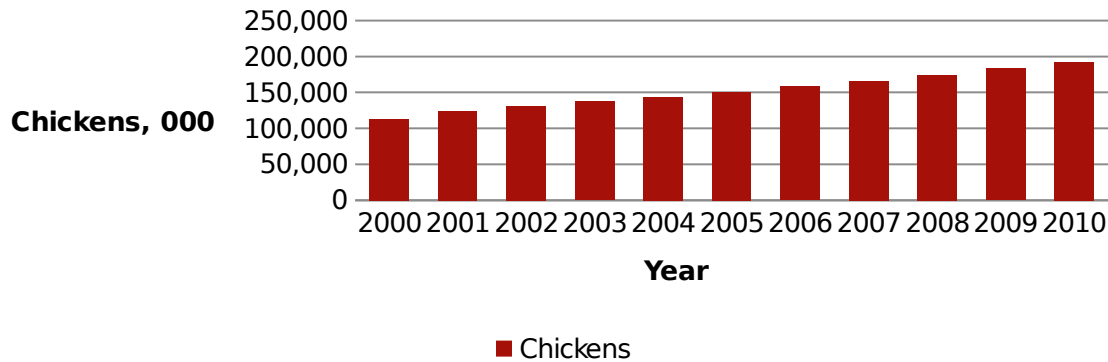


Figure 1: Nigerian Chicken Population. Source: FAOSTAT, 2012.

The Nigerian chicken population has grown at a compound annual growth rate of 5% since 2000.

NATIONAL POULTRY PRODUCTION

Correspondingly, the actual yield of chicken meat and eggs has also been on the rise. As shown in Figure 4, national meat production increased by 67.5% between 2000 and 2010, or a compound annual growth rate of 5%.



Nigeria: Chicken Meat Production

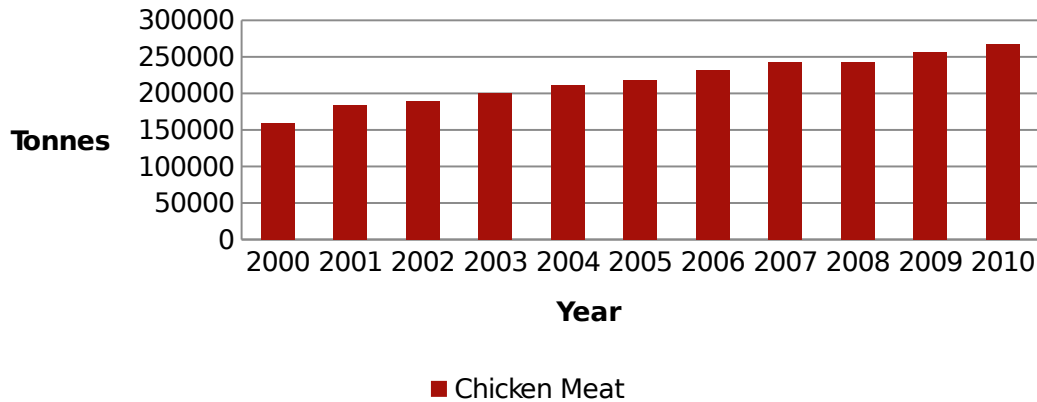


Figure 2: Nigeria, Chicken Meat Production. Source: FAOSTAT, 2012

National egg production has also increased by 56% between 2000 and 2010, also a compound annual growth rate of 5%.

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Nigeria: Egg Production

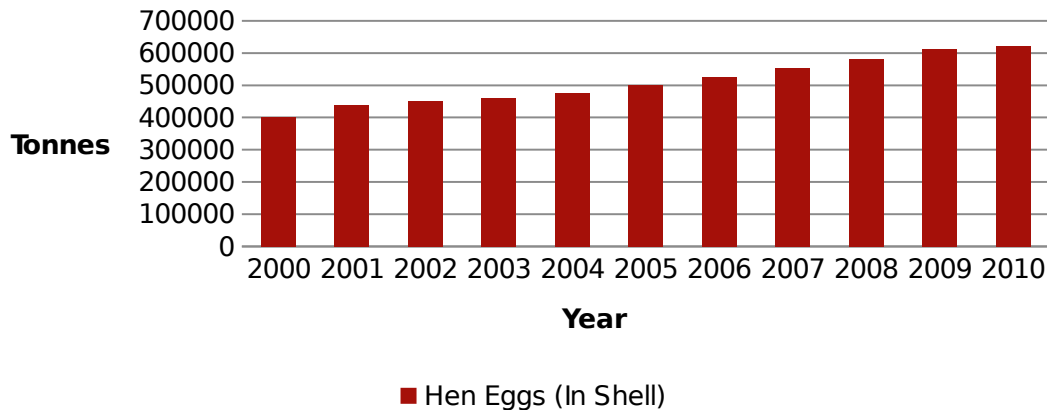
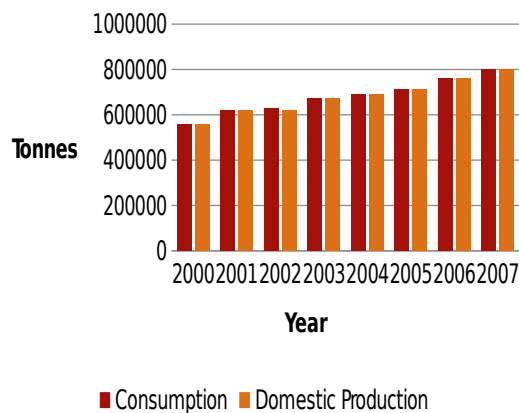


Figure 3: Nigeria, Egg Production. Source: FAOSTAT, 2012

Nigeria: Total Domestic Production and Consumption



Nigeria produced 1.61 kg of chicken meat per capita and 3.66 kg of eggs per capita in 2008. Given these production levels, the question that arises is whether they satisfy Nigeria's total

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demand. According to FAO data, the answer is yes – domestic production supplies almost 100 percent of Nigeria’s poultry consumption. However, in reality that is not the case, as significant quantities of chicken meat are imported into Nigeria to satisfy demand. Since demand is a function of price, these figures represent ‘effective demand for poultry at current prices.’ There is additional potential demand for poultry, which will be discussed later in this analysis.

Despite the fact that the Government of Nigeria banned poultry products (live birds, dead birds, frozen poultry, and bird’s eggs), in 2002, chicken meat continues to be smuggled into the country through neighbouring states, particularly through Benin. Given the fact that the imports are illegal, it is difficult to obtain reliable statistics on the volumes coming in. However, estimates can be made.

The World Bank estimates that up to 90% of Benin’s poultry meat imports are re-exported, primarily to Nigeria.⁷ In 2007, Benin was estimated to have imported 46,000 tonnes of broiler meat. Using the World

Figure 4: Nigeria, Historical Production vs. Consumption.
Source: FAOSTAT.

Bank’s estimate, this would mean the entry of approximately 41,400 tonnes of illegal chicken meat into Nigeria, amounting to 5.2% of domestic consumption. The figure is close to an estimate provided by the USDA Foreign Agricultural Service, which estimated 25,000 tonnes of poultry meat were imported in 2002.⁸ This amount would come to about 4% of domestic consumption for that year.

This meat usually originates from European countries (Netherlands, France, and Belgium). It travels in frozen form and enters Nigeria via land borders, eventually

7 (Nigeria Customs Service)

8

(David, 2002, p. 2)



finding its way to retail outlets across Nigeria.⁹ The smuggled chicken is sold frozen, and is normally cheaper than the meat from local live birds.

NIGER DELTA'S POULTRY POPULATION

The characteristics of the poultry sector naturally vary across different parts of Nigeria. This study focuses upon the sector in the Niger Delta and its linkages with poultry in other parts of the country. The first step is to understand the demographics of the industry within the Niger Delta Region. Historical data from the Federal Department of Livestock and Pest Control Services allow us to make a comparison of the poultry stock in the Niger Delta with the rest of the country. In 2003, the total bird population was just over 137 million, and the Niger Delta accounted for 17.5% of this total (21.8 million birds). The Niger Delta also made up 10% of the exotic bird (2.2 mn birds - mostly used for commercial purposes) population, and 18.9% of the traditional bird population. Imo State had the largest bird population, followed by Rivers State, which concurs with anecdotal evidence collected during the study. The proximity of the two states to Port Harcourt, which is the economic centre of the Niger Delta, is also a likely contributing factor. Ondo, Akwa Ibom, and Delta states also emerge as states with significant poultry populations.

Table 1: Geographical Distribution of Poultry in the Niger Delta. Source: Federal Ministry of Agriculture and Rural Development. February 2006 (data from 2003).

#	State	Traditional Birds	Exotic Birds	Total (2003)	Total (2010 Projection) ¹⁰
1	Abia	1,282,050	127,339	1,409,389	1,983,152

9 (Anderson & Gugerty, 2010, p. 5)

10 Projection to 2010, since this is the latest year for which FAO statistics are currently available.

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2	Akwa Ibom	2,772,000	277,830	3,049,830	4,291,417
3	Bayelsa	900,900	90,295	991,195	1,394,711
4	Cross rivers	1,155,000	115,763	1,270,763	1,788,091
5	Delta	2,356,200	236,156	2,592,356	3,647,705
6	Edo	1,120,350	112,290	1,232,640	1,734,448
7	Imo	5,832,750	584,601	6,417,351	9,029,857
8	Ondo	3,003,000	300,983	3,303,983	4,649,036
9	Rivers	3,465,000	347,288	3,812,288	5,364,272
	Total: Niger Delta	21,887,250	2,192,545	24,079,795	33,882,690
	Total: Nigeria	115,880,864	21,798,084	137,678,948	192,313,000
	Niger Delta Share (%)	18.9	10.1	17.5	17.6

Though state-level statistics beyond 2003 are not available, we can assume that the Niger Delta's poultry population grew at the same rate as the national population i.e. 5%. This results in an estimated total stock of 33.8 million birds in 2010, consistent at almost 18% of Nigeria's total poultry population.¹¹

NIGER DELTA'S POULTRY PRODUCTION

Though there is a paucity of data on poultry at the sub-national level, estimates for commercial production have been calculated to guide the discussion; using national per capita chicken meat and egg production ratios for 2008, the UNDP's 2010 population estimate for the Niger Delta, and the DFID-FAO's estimate of the size of the commercial poultry flock. This results in an approximate commercial chicken meat production of 23,000 tonnes, and commercial egg production of 53,000 tonnes.¹² These figures must be interpreted with the caveat that they are based

¹¹ The result is close to an estimate provided by the New Nigeria Foundation in a 2011 study titled 'Analysis of the Niger Delta's Economic Opportunities,' which put the Niger Delta's chicken population at 14% of Nigeria's total.

¹² See Annex E for estimation method.



upon population and do not account for regional disparities in production. From our primary research, we know such disparities to be significant. This means that the commercial production level for chicken meat in the Niger Delta is likely to be significantly lower, since we know that a majority of broiler production takes place in the southwest of Nigeria.

END MARKET ANALYSIS FOR POULTRY PRODUCTS

Without any hard statistics published on the actual market size for poultry products, by market segments, this analysis has identified four major market segments that capture the majority of the purchases of chicken meat and eggs in the Niger Delta:

- Catering companies feeding the oil industry;
- fast food outlets;
- household consumers; and
- the hotel industry.

Table 2: Niger Delta end markets for commercial poultry meat and eggs

End Market	Meat			Eggs			
	Annual Volume (Tonnes)	Annual Value (NGN)	Annual Value (\$)	Annual Volume (Tonnes)	Annual Volume (Crates)	Annual Value (NGN)	Annual Value (\$)
Catering Companies	7,380	5.6bn	35.2m	1,508	1m	821m	5.1m
Fast Food outlets	9,180	6.9bn	43m	81	54,000	37.8m	236,000
Household Consumers	25,716	19.2bn	120.5m	55,970	37m	26bn	163m

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Hotels	356	285m	1.78m	129.6	86,400	60.4m	378,000
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CATERING COMPANIES

The presence of the oil and gas sector in the Niger Delta has fostered the creation of a number of supporting industries, one of which is the catering services industry. To service the large oil and gas sector, catering companies source a variety of good from across Nigeria, including an assortment of food items, which account for the bulk of their cost model. Poultry products constitute a significant portion of these food items, thereby making catering companies an important end market for chicken. This section deals with the demand for such products and the issues that surround their supply.

CHICKEN MEAT

DEMAND

The estimated demand for processed chicken meat amongst large catering companies has been estimated to be \$35 million per annum for processed chicken meat.

ORIGIN OF SUPPLY

Our research shows that, most catering companies do not source this supply of meat from within the Niger Delta.¹³ Rather, they purchase from large-integrated farms in the Southwest of Nigeria. One poultry company in particular, ZARTECH farms in Ibadan has a dominant position in the market for processed chicken meat. Other large-scale producers of processed chicken meat include Obasanjo Farms and Chi Farms. While also having large operations, they do not command the same reputation as ZARTECH. ZARTECH is able to maintain this dominant position due to its ability to:

¹³ Interview with NC&SL, UNITOP, SJ ABED



- Provide slaughtered, cleaned, cut, and frozen chicken meat in standardized packaging;
- Ensure quality and hygiene standards;
- Ensure timely, and short-notice delivery, and handle the large volumes demanded;
- Give larger customers a credit line after three purchases of 5 or more tonnes of chicken. The 4th shipment can be done on credit basis; and
- Price its products competitively.

PROCUREMENT MECHANISMS AND QUALITY STANDARDS

Catering companies, particularly ones which are dependent upon the oil and gas sector as a significant source of their revenue, have high standards for the quality of meat and eggs that they procure. These standards are set by the oil and gas multinationals, which have specific requirements for the type, quality, and form in which they wish to purchase meat and eggs.

Catering is also one of the sectors which has been marked for 100% Nigerian content by the Nigeria Content Development and Monitoring Board.¹⁴ This means that catering companies must source the entire inventory of the goods and services they provide on contracts with the oil and gas sector, from within Nigeria. Note that this does place any obligation on the catering companies to source produce from within the Niger Delta, which has important ramifications for the poultry sector value chain, and the growth of the sector within the Niger Delta.

Catering companies therefore require that they receive slaughtered, cleaned, cut, frozen, packaged, and labeled chicken meat. While this requirement is easily met by large integrated farms, small and medium producers have a hard time providing chicken meat of the right specifications and quantity, due to a lack of facilities and production capacity.

14 (Nigeria Content Development and Monitoring Board, 2012)



CHICKEN EGGS

DEMAND

The size of the egg market with catering companies serving the oil and gas industry in the Niger Delta is estimated to be \$5.1 million/annum.¹⁵

ORIGIN OF SUPPLY

Interviews with the current sample of catering companies illustrates that they rely upon local egg distributors for meeting their demand for eggs. There are fewer quality requirements for eggs, and as a result, lower risk. Therefore the local producers, which contain a combination of large/medium-sized farms and backyard poultry producers, are able to meet requirements. Normally, catering companies have purchase arrangements with 5-6 local egg distributors, who sell them eggs on a weekly basis.

PROCUREMENT MECHANISMS AND QUALITY STANDARDS

As far as eggs are concerned, there seem to be no special requirements. Standard chicken eggs from a diversity of suppliers are acceptable.

MARKET TRENDS

The demand for poultry products by the catering industry depends upon the industry's dynamics, which have been discussed in Part One. While deliberate local content programming does not currently play a significant role in how poultry products, particularly meat, are sourced, it is important to keep in mind that this is a direction that all the major catering companies would like to head towards.

FAST FOOD OUTLETS

Fast food outlets are an important end market for chicken meat in the Niger Delta due to large and increasing demand from a population which is fast adapting to eating out. According to a 2011 estimate, there were 800¹⁶ outlets with a total worth

¹⁵ \$1,079,250 inflated by a factor of 5 to account for wider oil and gas market results in. This is the estimated total annual market segment demand for eggs.



of NGN 190 billion (\$1.25 billion) across the country, representing 60 recognized brands, in addition to a host of smaller ones.¹⁷ Chicken is a major product for them.

BRAND CATEGORIES

The fast food industry in Nigeria, and in the Niger Delta, can be organized into three categories.

NATIONALLY RECOGNIZED BRANDS

These companies operate at a national level, account for 70% of fast food sales, and focus on quality. This category includes players such as Mr. Biggs, Chicken Republic, Tantalizers and Sweet Sensation, amongst others. Mr. Biggs, Nigeria's oldest (since 1986) fast food brand, itself has 29 outlets in the Niger Delta,¹⁸ while Chicken Republic has 12 outlets.¹⁹ Global brands have not yet established a significant present in Nigeria, with KFC being the exception. KFC began operations in 2009, and has plans to continue expanding.²⁰

16 (NNEBE, 2010)

17

(Olotu, 2011)

18 (UAC Restaurants)

19

(Chicken Republic)



REGIONAL BRANDS

These are brands which have local recognition and between 2-5 outlets per state. These establishments also charge a premium for quality, and usually retail fried chicken at prices similar to national brands. Some examples of fast food brands with operations in the Niger Delta are Sizzlers (Ondo, Delta, and Bayelsa), Kom Chop (3 branches in Warri), Vincent's (Yenagoa and Port Harcourt), and Genesis (8 branches in Rivers).

LOCAL/NEIGHBOURHOOD BRANDS

Such brands usually operate a single outlet, have a smaller range of products, and try to keep prices competitive for a lower income bracket.

CHICKEN MEAT

DEMAND

Fast Food outlets in the large and medium categories generally require the following types of processed, packaged chicken:

- Whole chicken²¹
- 9 piece chicken parts²²
- Sausages
- Nuggets

20

(Business Day, 2011)

21 Retail price for a full roasted chicken at Chicken Republic, Warri: 2400 NGN

22 Retail price for a single piece of fried chicken at Chicken Republic, Warri: 400 NGN/piece

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- Patties

The combination required differs depending upon the menu offered. Local/neighbourhood brands do not require as diverse a set of poultry products.

Assuming a total of 270 fast food outlets across the Niger Delta's nine states, our analysis estimates a total demand of 9,180 tonnes of chicken meat.²³ This is a conservative estimate and the actual demand is likely higher. This demand can be further segmented between national, regional, and neighbourhood brands of fast food, a point which will be further elaborated upon.

ORIGIN OF SUPPLY

National and regional brands source their chicken meat from large integrated poultry producers in the Southwest of Nigeria. These include ZARTECH, Obasanjo Farms, and Avian Specialties. Of these, ZARTECH enjoys the most popularity due to the quality of its product and the reach of its distribution network. For a range of issues related to quality, which will be discussed in the next section, it is not feasible for medium to large scale fast food outlets to source their chicken meat

²³ Assuming 30 national (large), regional (medium), and neighbourhood (small) fast food outlets per state consuming an average of 2.83 tonnes of meat per month and 16.67 crates of eggs per month.



from local producers.²⁴ Fast food outlets can expect to receive a wholesale price of 760 NGN/kg for chicken meat in Warri²⁵, and 700 NGN/kg in Lagos.²⁶

Neighbourhood brands purchase chicken meat from retail outlets in their respective localities, which often sell frozen chicken from local and imported sources. Local frozen chicken currently retails between 750-800 NGN/kg while imported frozen chicken fetches 700 NGN/kg. If the outlets wish to buy directly from the outlets of large, branded chicken producers, they can do so at their supply depots, which also serve as sales outlets. ZARTECH has two depots, one in Benin City and another in Port Harcourt, where frozen, packaged chicken retails for 850 NGN/kg.²⁷ Obasanjo Farms also has a depot in Port Harcourt. However, transportation costs would also need to be factored into such purchases.

24 Based upon conversations with AJ's, Chicken Republic, and Sizzlers in Warri, and Sweet Sensation in Lagos.

25

Chicken Republic

26

Sweet Sensation

27 ZARTECH Representative, Ibadon

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PROCUREMENT MECHANISMS AND QUALITY STANDARDS

The quality, timeliness, and quantity of meat supply are important for fast food outlets.

When purchasing from ZARTECH or other large integrated producers, national and regional fast food brands are assured of a consistent product, which is cleaned, packaged, frozen, labeled, and of a standard weight. The meat must be blast frozen, kept in cold rooms while on the production site, and has to be transported in cold storage vans.²⁸ Currently other producers are unable to supply such quality; the 'Live Bird' market caters to a very different kind of consumer, and there are not enough broiler producers with integrated facilities and processing units inside the Niger Delta. Neighbourhood brands are able to make do with the quality of chicken sold through the retailers in the live bird market. This means that their meals are often prepared using tougher meat from old layers, and from imported frozen chicken which is often exposed to unhygienic conditions.

Secondly, true to their name, fast food outlets operate on a quick-turnaround basis. Depending upon how well an outlet manages its inventory, it can expect to place between 2-3 orders for meat per month. However, fluctuations in demand mean that orders often have to be placed on short notice. This characteristic makes fast foods dependent upon large branded suppliers of chicken meat, as they are able to respond to such fluctuations. For example, if supply runs out, ZARTECH is readily able to make short-notice delivery runs for cities in the Niger Delta using its depots in Benin and Port Harcourt. Local producers of broiler meat are unable to offer the same responsive service. The large producers are also able to make sales on credit, which smaller producers and distributors are unable to do so.

Third, fast food outlets place orders in bulk quantities. Though the quantities (between 2-5 tonnes for small-large outlets) are modest and easily catered to by large poultry producers, they are too much for individual smallholder poultry producers inside the Niger Delta to provide.

²⁸ Cold storage should be between -18 and -40 degrees centigrade to prevent deterioration



Fast food businesses would rather not take on the hassle of having to deal with several suppliers, a month, nor to expose themselves to fluctuations in quality and quantity. Other issues are also at play. For example, owners of fast food outlets are not always residents of the localities where the business operates. In such cases, building relationships with meat and egg suppliers becomes difficult – one doesn't know whom to trust. It is also known that different brands utilize different purchasing models. Some centralize their purchases and create regional purchase hubs.²⁹ Others operate on a decentralized model, allowing individual units to enter into their own purchase agreements. In the case of the latter, franchise outlets are common.

There is evidence that medium-sized, integrated broiler producers provide meat to fast food outlets, in effective competition with large integrated producers when competing on a localized basis. However, since there are few such producers in the Niger Delta, this is not a common occurrence.

CHICKEN EGGS

DEMAND

Fast food outlets in the Niger Delta have an estimated collective demand of 54,000 crates of eggs per annum.³⁰

²⁹ As in the case of Sizzlers

³⁰ Calculation based upon same assumptions as earlier discussed for meat. According to primary research, the demand pattern for different-sized establishments looks like: 30 crates/month (large), 20 crates/month (medium), and 10 crates/month (small).



ORIGIN OF SUPPLY

Fast food outlets are known to purchase their eggs locally, often maintaining relationships with between 1-3 suppliers within their own community.³¹ Maintaining a working relationship with their immediate communities is important. In cities such as Warri in the Niger Delta, groups of young men known as 'area boys' are known to visit small businesses such as fast food outlets and demand various forms of compensation for allowing businesses to operate.³² Given the fact that the quantities being ordered by fast food outlets are relatively small (between 10-30 crates per month); they seem to have little difficulty in obtaining their requirement from local distributors. Fast food outlets in Warri can expect to purchase eggs at 700 NGN/crate.

PROCUREMENT MECHANISMS AND QUALITY STANDARDS

Eggs can come in three sizes – small, standard, and large, and are bought by the crate. However, the difference between the categories is small, and means that egg wholesale prices per crate can range from 650 to 750 NGN. Distributors (who can also be referred to as egg collectors), collect eggs from multiple sources, usually purchasing from small and medium-sized producers in the Niger Delta, and deliver the eggs to the business location. No special delivery vehicles are used.

MARKET TRENDS

The national fast food industry has grown at an average of over 40% per annum between 2005 and 2011. The drivers behind this expansion are an increase in per capita incomes, and rising urbanization.³³ Nigeria's urban population has been

31 Interviews with Chicken Republic and Sizzlers

32

Chicken Republic, Warri

33 (NNEBE, 2010)



increasing at a rate of 4% per annum since 2005, and in 2011, almost 50% of Nigerians (over 80 million people) lived in urban areas.³⁴ The presence of increasing number of consumers with greater spending power, and a stronger fast food culture has resulted in a favourable market outlook for Nigerian fast food.

Global fast food chains such as KFC, which aims to have 300 outlets in Nigeria by 2020, recognize this.³⁵ Pizza

Hut too has plans of expanding its presence in Nigeria. However, such global brands demand even higher standards for chicken meat than large national brands. To supply its outlets with the right quality, KFC has been building a network of dedicated chicken meat suppliers, of which there are four at present.

The Niger Delta, which is home to approximately 33.6 million people (25% of total population), and has some of Nigeria's largest cities after Lagos (insert names of cities), will follow this trend. This will lead to increased opportunities for the producers of poultry meat, inside and outside the Niger Delta.

HOUSEHOLD CONSUMERS

"The only limiting factor we've got in Nigeria right now is actually chicken supply, and finding suppliers who are able to meet our global quality standards in sufficient quantity. The commercial chicken industry is horribly underdeveloped" – Keith Warren, MD

34

See Annex B.

35 Southern Africa Horizon Scan, Rockefeller Foundation

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The vast majority of household consumers purchase live chicken through live bird markets (LBMs). Individuals account for over 90% of sales in LBMs, which are also frequented by institutional buyers looking to buy at small scale. It is common for LBM's to operate on a daily basis in urban areas, while weekly markets are more common in rural areas.

Poultry products, along with other high-protein foods such as beef and mutton are still considered luxury items in Nigeria. Only 5% of daily energy supply is provided by animal products in Nigeria, which is below the average of 9.5% for West Africa. For the majority of Nigerians, particularly those living in rural areas, poultry consumption is saved for special occasions. This highlights a key characteristic of the market for chicken meat in Nigeria – seasonality.

The demand for chicken meat spikes around the festive season, which includes the occasions of Christmas, New Year, Easter, and Eid. For the predominantly Christian Niger Delta region, Christmas and Easter are the most important holidays on which chicken meat is bought for consumption and for giving as gifts. This period, which runs from September to April every year, is when the demand for broiler meat peaks. Poultry farmers, even those who are not in the broiler meat business, enter the broiler rearing business to generate extra income during this period. Therefore, 6-8 weeks before December 25, there is a high demand for broiler day-old-chicks (DOCs), feed, vaccines, and other inputs. Larger birds are preferred by market during the festive season, and therefore it is not unusual to see broilers being reared for 8-10 weeks in advance. Producers of eggs also try and time the culling of their old layers and replacement of their parent stock with this period, a fact which will be discussed in further detail later on. The price of meat can go up by 25-30% during this period, with broilers being sold for between NGN 1,500-2,500/bird, old layers for NGN 1,000-1,500/bird, and old parent stock as high as NGN 3,500/bird.

Household consumers also prefer fresh meat from live birds to frozen meat. This frozen meat is mainly imported, and though it can be obtained somewhat cheaper, several negative factors are associated with it. This includes the claim that the meat is often rotten since the cold chain is broken during its smuggling. It is also commonly perceived that chemicals are added to the meat to preserve it during its long journey into Nigeria – these are thought to be carcinogenic. It is difficult to state how accurate these claims are, but there is undoubtedly some truth to them,

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and they are often repeated by poultry association representatives to dissuade consumers from imported frozen poultry.

The consumption of chicken is expectedly greater in higher income households than lower income households, which consume greater quantities of fish (fish is the cheapest alternative meat to chicken) and beef. The demand for chicken is price elastic, and in 2006, it was estimated that a 10% increase in the price of chicken would reduce its share in the household budget by 30% in favour of increases in beef (10%), fish (7%), egg (10%), and milk (3%). The effects of price elasticity are greater in poorer households, which spend a greater proportion of their household income on food-related expenditures.³⁶ The same characteristics are observed when urban households, which tend to have higher income, are compared to rural households with lower income.

Traditional tastes also play an important role in the demand for chicken meat. In both urban and particularly rural markets, free-range birds are preferred as their meat is considered to be more flavourful than broiler meat, and their tougher muscle texture is more suited to dishes with longer cooking times, such as soups. It is also perceived that commercial feed, which is fed to broilers, contains growth enzymes and synthetic chemicals which are hazardous to human health in the long term.³⁷ Finally, in rural areas, the meat from traditional birds is also thought to increase male virility.

Egg consumption is thought to be quite low in Nigeria, and is often complained about by the Poultry Association of Nigeria.³⁸ While the consumption of eggs is correlated with household income levels, egg prices are in line with the average in

36 (Chianu, Kormawa, & Ezedinma, 2006, p. 20)

37 (Sonalya & Swan, 2004)

38 (Aboluwade, 2012)



West Africa, and at between 25-30N/egg, within the reach of most consumers.³⁹ The Association states that is due to the fact that consumers associate egg consumption with the risk of high cholesterol and heart disease, in addition to the fact that eggs are not a key ingredient in common Nigerian dishes. A study conducted in Nasarawa state calculated average household consumption to be 54.9 eggs (1.83 crates) per month. Given that the average Nigerian household size is 5, this is extremely low. PAN asserts that there is potential for much higher levels of egg consumption, citing that the World Health Organization recommends daily minimum intake of 70 grammes of animal protein, while the Nigerian average is 14 grammes. A single egg can provide up to 40 grammes of protein. The Association, therefore, is lobbying the government to sponsor initiatives to increase the popularity of eggs. Demand for eggs also comes from bakeries, the manufacturers of baby food, and the use of egg white in shampoo and book binding. The Association is also looking to develop these alternate sources of demand.

CHICKEN MEAT

DEMAND

Using population estimates, per capita consumption of poultry in Nigeria, and poverty estimates, we can construct figures for demand of commercial chicken meat and eggs in the Niger Delta. Per capita consumption rates are depicted in Figure 7 below:



Quantity of Poultry Meat and Eggs consumed in Nigeria

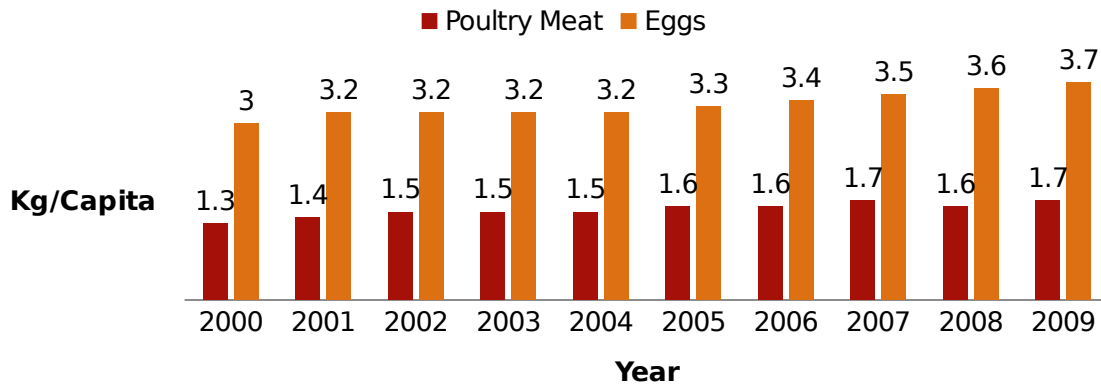


Figure 5: Quantity of poultry meat and eggs consumed in Nigeria. Source: FAOSTAT - Food Supply in Africa⁴⁰

According to the UNDP, the Niger Delta's population is an estimated 33.6 million. Using per capita consumption rates of 1.7kg chicken meat per annum, and assuming that only 45% of the population is able to consume commercial poultry products,⁴¹ results in a demand of 25,716 tonnes of meat/annum.

ORIGIN OF SUPPLY

The demand for chicken meat is met by a combination of commercial and traditional birds, including a majority of old layers and broilers. The main avenue through

40

http://faostat.fao.org/Portals/_Faostat/Downloads/zip_files/FoodSupply_LivestockFish_E_Africa_1.zip

41 To discount those living below the poverty level, using national level of poverty estimated at 54.4% by the Nigerian National Bureau of Statistics in 2004

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which these products reach individual consumers are the LBMs, which in turn are supplied by retailers, distributors, and small-scale poultry producers. It should also be remembered that a sizeable portion of it comes through imported, frozen chicken, which is smuggled into Nigeria from its neighbours. The imported frozen chicken competes on price with the meat of live birds, and is considered to be of inferior quality to live bird meat.

PROCUREMENT MECHANISMS AND QUALITY STANDARDS

The majority of the household and small shop purchasing takes place through retailers in LBMs. Consumers purchase birds alive and have them slaughtered by butchers at the market (external service). Sometimes birds are taken home for slaughtering. Birds are sold by weight, with adjustments in price made on the breed and type of bird. The average consumer does not require high standards of quality and cleanliness, which is in part evidenced by the fact that demand continues to increase despite unhygienic conditions in most markets. The FAO has reported extensively about this issue, and had this to say about hygiene in Nigerian LBMs:

"....in all the markets visited, general hygienic conditions were, at the best, very, very poor, for sales points, stores, the market in general and, in particular, slaughtering points..... a number of facilities are simply not present, such as areas for disinfecting hands and shoes, as well as trucks, laboratory services, showers, freezer storage, or on-site culling and incineration of birds. Neither are veterinary or para-veterinarian personnel available in most cases for ante and post-mortem examinations, and only a few public or private veterinary services are available for consultancy..."⁴²

The end consumers have little input on the quality and safety of birds, and it is likely that their willingness to pay for improved quality is also quite low.

42 (Pagani, Abimiku, & Emeka-Okolie, 2008, p. 18)



CHICKEN EGGS

DEMAND

Using the assumptions outlined earlier and a per capita egg consumption rate of 3.7kg per annum the demand for eggs in the Niger Delta is 55,970 tonnes per annum.

ORIGIN OF SUPPLY

The majority of supply is met through commercial production of eggs by small, medium, and large scale producers of poultry products.

PROCUREMENT MECHANISMS AND QUALITY STANDARDS

Eggs are also procured by household consumers through retailers at LBMs. The retailers in turn are supplied by a network of collectors and distributors. It is also common for retailers to have direct relationships with poultry producers. Eggs are sold by the carton, and come in small, standard, and large sizes. no special packaging or processing of eggs is necessary, and they are subject to the same sanitary conditions as meat. However, given that eggs are not processed or easily exposed to bacteria, they are not an at-risk product or a vehicle for carrying disease.

MARKET TRENDS

The size of the individual and household consumer market for poultry products is increasing, as has been documented in literature produced by multilateral development agencies and the Nigerian Government. As shown in Figure 7, per capita consumption of poultry meat and eggs in Nigeria from 2000-2009 increased over 20% and 18% for meat and eggs respectively. The main driving factors behind this are rising per capita incomes, urbanization, and the evolving preferences of the Nigerian consumer. A study from the World Health Organization (WHO) states that diets in developing countries are changing as incomes rise; the share of staples is on the decline, while the consumption of meat, dairy products and poultry products is on the rise. Furthermore, poultry's share is predicted to grow the fastest.⁴³

43 (World Health Organization)



Consumption in urban areas is naturally greater, due to higher incomes, availability of meat and eggs in markets, and fast food outlets.⁴⁴

The consumption of meat and eggs is also increasing due to changing consumer preferences. Wealthier urban consumers, who were used to eating beef and goat meat, are gradually increasing consumption of white meat as they realize its health benefits. This includes chicken and fish. It is also easy for them to access dressed chicken from super markets and the retail outlets of large-integrated commercial poultry farms. The middle class (currently estimated to be between 5-10 million and growing), also prefers the consumption of chicken and fish.

HOTELS

Hotels maintain a steady business in the Niger Delta due to the supply of guests generated by the presence of the oil and gas industry. Hotels are also institutional purchasers of chicken meat and eggs, although they demand much smaller volumes than other end markets. However, they are significant since they are also a year-round market for broiler meat. The source of purchase of poultry products varies with the brand, size, and standing of a hotel. Discussions with the Protea and Kayriott hotels in Warri have given us an estimate of a typical hotel's demand for chicken meat and eggs. The Protea has 67 rooms, and is one of the leading/upscale hotels in Warri. Kayriott has 72 rooms but unlike Protea, it is locally owned and managed.

CHICKEN MEAT

DEMAND

Using consumption numbers for Protea and Kayriott, an average demand of 330 kg of chicken meat per hotel per month has been computed. Assuming there are 10



similarly-sized hotels per state, this amounts to a demand of 356,400 kg/annum, at a value of NGN 285,120,000 or \$1,782,000.

ORIGIN OF SUPPLY

The purchasing pattern depends upon the strength of a hotel's brand name and extent of operations. In Warri, the Protea purchases chicken meat from ZARTECH, at a rate of NGN 850/kg. Meanwhile, Kayriott Hotel purchases imported frozen chicken from the local market in Ibadu, at NGN 750/kg. Larger establishments, such as the Novotel in Port Harcourt, are also known to purchase from ZARTECH.

PROCUREMENT MECHANISMS AND QUALITY STANDARDS

Hotels procure either through corporate arrangements which they have with large scale producers of meat and eggs, such as ZARTECH, or through agreements with local distributors. Purchasing behavior similar to the catering industry is witnessed – while chicken may be purchased from a branded source, eggs are bought from local distribution agents. Orders are placed directly with ZARTECH, which delivers supplies to the door using their own delivery system. In the case of procuring chicken meat from local markets, it was observed that hotels maintain relationships with 2-3 retailers, and place an order once a week. Chickens are slaughtered in the market, packed into cartons, and then picked up from the market by the hotel's transport vehicle. Hotels usually have their own cold storage units in which they then freeze the meat. In the case of the latter, the chicken meat is subject to all of the quality issues and health hazards that accompany meat in the LBM.

Hotels require varying standards of meat quality. While Protea and other large establishments for example, feel a need to purchase from ZARTECH, smaller establishments do not. However, hotels do prefer to purchase dressed chicken to reduce the processing burden once the chicken is on the premises. Timely delivery in the right quantity is also important, similar to other institutional buyers.

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CHICKEN EGGS

DEMAND

A total demand of 86,400 crates (30 eggs per crate) per annum amongst the Niger Delta hotel market has been estimated.⁴⁵ This amounts to a value of NGN 60,480,000, or \$378,000.

ORIGIN OF SUPPLY

In the case of the hotels in Warri, eggs are sourced from local distributors at a rate of NGN 700/crate. The hotels each maintain relationships with 2-3 suppliers. In the event that one of them has a shortage, the others are able to meet the gap.

PROCUREMENT MECHANISMS AND QUALITY STANDARDS

The procurement of eggs is straightforward. Standard sized, commercially produced eggs are accepted, and they must be packed in cartons. Hotels usually have an accounts officer, who also acts as a purchasing agent, in their employ. This individual maintains links with suppliers of various food items, including egg distributors. It is their job to place orders and ensure a consistent supply of food items for the hotel.

MARKET TRENDS

The hospitality sector was hit hard by militancy in the Niger Delta, and has benefited from the peace dividend since the Amnesty programme in 2009.⁴⁶ However, the Niger Delta region remains volatile, and most foreign countries, including the United States⁴⁷ and the United Kingdom advise against travel to the

45 Using an average consumption of 80 crates per hotel, per month.

46 (Ezigbo, 2008)

47



region.⁴⁸ Given the lack of tourism, the majority of foreign visitors to the Niger Delta are linked with the oil industry, which is also holding back on large-scale investments due to regulatory uncertainty. Under such circumstances, it is unlikely that the hospitality sector will experience a significant increase in size and occupancy levels. This assertion is supported by PIND's report on Economic Opportunities in the Niger Delta in 2011, which stated that only 2% of individuals in the Niger Delta considered hospitality to be a source of employment growth over the next five years.⁴⁹ Therefore, it is expected that the consumption of poultry products by the hotel market should remain steady if overall stability remains at current levels.

COMMODITY ANALYSIS

FLOW OF PRODUCTS

There are two important production systems from which poultry products originate in Nigeria (and in most other developing countries) – traditional and commercial poultry. The focus of this study is that commercial poultry production. The commercial poultry value chain begins with the import of grandparent stock by

(U.S. Department of State, 2012)

48

(British Foreign and Commonwealth Office, 2012)

49

(Partnership Initiatives in the Niger Delta; GIZ; New Nigeria Foundation, 2011, p. 11)

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hatcheries, mainly operated by large-integrated producers who own licenses to do so. Grandparent stock turns to parent stock which provides both layer and broiler DOCs, which are then distributed to the range of producers ranging from the small-sized commercial category to medium and large scale producers. The majority of farmers in Nigeria are egg farmers, who also enter the broiler market close to the festive season.⁵⁰

Once DOCs are with the various categories of producers, they rear either laying birds or broilers using a variety of inputs and supporting services. The majority of farmers are engaged in egg production, and therefore they bring up birds for approximately 18-20 weeks before they start laying eggs. They continue to lay for one year, at the end of which they become part of the meat market as old-layers. Farmers try to align culling of old-layers with the festive seasons. Due to this, there is an egg supply shortage immediately following Christmas and New Year.⁵¹

The three sources of chicken meat are spent-layers, broilers, and smuggled imports. Spent-layers are generated as a by-product of egg production (which is the main business of most small and medium-sized poultry farmers). Layers remain in production for about a year, after which their productivity drops and they need to be culled. Farmers try to time this culling with the festive season to take advantage of higher prices. Broiler production, meanwhile, can be split into two categories – seasonal production by poultry producers whose main trade is egg production, and medium-large integrated producers, which engage in specialized-year round broiler production. For the first category, it is important to align production with the festive season. For the second category, it is important to build relationships with institutional clients that require meat year-round.

50 Christmas, Eid, New Year, and Easter.

51 (Akinwumi, Okike, & Rich, 2010, p. 63)



Following production, eggs and meat move through egg and live-bird distributors. Distributors are the key link between producers and end markets. Poultry products move through them and then are sold in the end markets mentioned earlier. These include individual and household buyers, fast food outlets, catering companies, hotels, supermarkets, and restaurants. Distributors are not the only medium for reaching end markets however, and most large-scale producers have direct relationships with institutional purchasers.

Certain characteristics of product flows inside the Niger Delta distinguish it from other parts of the country. The most important is the fact that there are few hatchery operations inside the region. The region meets the majority of its DOC requirement from hatcheries in the southwest, which gives DOC distributors significant importance in the value chain, and also means that farmers pay higher prices for their inputs. An estimated 75% of DOCs pass through distributors, while 20% are sold directly from hatcheries to medium-large commercial producers. 5% are sold directly to small-scale commercial farmers. Egg production is dominated by medium and large scale producers, who comprise 60% of regional production.⁵² The main channel for sales of eggs is through egg distributors into LBMs, with direct sales to institutional buyers making up a small portion of total sales.⁵³

FUNCTIONS AND ACTORS

To build a strategy to increase growth and competitiveness in the poultry industry, it is important to build an understanding of the key actors involved in the production of chicken meat and eggs.

52 (Akinwumi, Okike, & Rich, 2010, p. 58)

53

Ibid.



HATCHERIES⁵⁴

Hatcheries play a critical role in the commercial poultry industry as they supply day-old-chicks (DOCs) to commercial farms for broiler and egg production. DOCs are newly-hatched chicks. While called 'day-old-chick,' they can be older than 24 hours, and be 3-5 days old at time of sale. These are produced in hatcheries and then taken to farms where they are grown, by feeding, into broilers or layers. The quality of DOCs is an important determinant of the meat yield of broilers and the egg output of layers. The output of commercial hatcheries is driven by poultry producers, and hatcheries adjust their production rates accordingly.

Hatcheries themselves depend upon a number of market actors and supporting services. First, they must obtain grandparent stock from which parent stock is produced. Grand-parent stock is currently imported into Nigeria, though some efforts at indigenization are being made.⁵⁵⁵⁶ Hatcheries maintain close relationships with medium and large-scale commercial poultry producers, who act as a source of credit by paying in advance for the delivery of DOCs.⁵⁷ DOC distributors also behave in similar fashion. Second, the activities of feed millers have a direct impact on

54 (Akinwumi, Okike, & Rich, 2010, p. 10)

55 According to the Federal Ministry of Agriculture and Rural Development, there is currently a shortage of grand-parent stock in Nigeria, which is contributing to a shortage in supply of DOCs, and an increase in their price. The Government of Nigeria is considering ways of increasing the availability as part of its 2012-15 'Action Plan for Poultry Commodity Transformation.'

56

Some hatcheries skip the step of obtaining grandparent/parent birds, and obtain hatching eggs directly. These are then used to produce DOCs.

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hatcheries. Since feed is a key input, its price and availability impacts the hatchery bottom line directly. Feed millers are also often a source of credit. Hatcheries also require veterinary services and vaccine supplies to ensure protection of their poultry flocks from disease. Finally, providers of cages, packaging, and saw dust are also important for the operation of hatcheries.

In Nigeria, hatcheries are concentrated in the southwest, with the largest ones operated by large-integrated poultry producers such as Obasanjo Farms, ZARTECH, Agrotech, and CHI Farms.⁵⁸ The high cost of equipment, hatching of eggs, and the limited issuance of licenses for import of grand-parent stock discourage new entrants into the hatchery industry. Hatcheries also require electricity to operate the hatching units, and due to intermittent supply, generators often have to be used at significant cost. This makes hatcheries a difficult investment for small and medium-sized poultry producers. Additionally, the Government restricts the import of Grand Parent stock to only a few large scale farms, including Obasanjo Farms, Chi Farms, Avian Specialists, Amo Farms, and others, none of which have their main base in the Niger Delta.

There are two main avenues for sales by hatcheries; direct sales to medium and large scale producers, and sales to distributors. Distributors handle a large volume of layer and broiler DOCs, and supply to more disparate parts of the country. In the Southeast, due to the distance from hatcheries in the Southwest, DOC distributors handle the majority of DOC sales to small and medium sized farms.

57

DOC delivery orders have to be made usually 2-3 months in advance. Waiting times are longer for delivery close to the festive season.

58 For the geographic dispersion of hatcheries in Nigeria, see Annex A

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DISTRIBUTORS

Four types have been identified in the poultry value chain. These include DOC distributors, broiler contractors, egg distributors and imported chicken distributors.

DOC DISTRIBUTORS

DOC distributors are an important interface between hatcheries in the Southwest, and small and medium-sized commercial farms in the Niger Delta. The distributors handle both broiler and layer DOCs, though it seems there is a greater trend for egg producers to travel to the southwest to buy DOCs themselves. They procure large quantities (5-10,000 at a time), and are aware that farmers need chicks which mature early, resist disease, have high feed conversion ratios, and low mortality. The demand for layer DOCs exists year round, but the demand for broiler DOCs is seasonal, and peaks around the festive season.

The seasonality of the broiler market makes DOC distributors an essential node. Broiler production is timed with Christmas, New Year, Easter, and Eid. To be ready in time for Christmas and New Year, broilers have to be set by September/October. This means that small and medium-sized producers have to place their orders in advance. DOC distributors often are more concerned with meeting larger orders, and therefore those procuring smaller quantities are often shortchanged and asked to go straight to hatcheries themselves. There is usually a minimum waiting period of 21 days at hatcheries in Ibadan.

Distributors buy DOCs in boxes of 51 chicks. They buy DOCs in Ibadan at NGN200-250/chick and resell in the Delta region for N300-350 (DOCs are sold to smaller distributors at the rate of N270-300). The distributors buy layer DOCs at NGN 150 and resell for NGN 180 to smaller distributors and NGN 200 to poultry farmers.

It was learnt that the transport cost is NGN 10-20/chick. The vehicles used are usually not ideally suited to DOC transportation. Due to the distance and poor roads between Ibadan and the Niger Delta Region, a certain number of DOCs usually die during the journey. Transporters charge the same price, regardless of the number of chicks they deliver, but the buyers are forced to absorb the cost. Small farmers pay for their transportation.

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There is also a lack of trust between poultry farmers and DOC distributors. The former are often suspicious of what is being sold to them, and if they can afford it, they travel to the southwest to purchase DOCs themselves. In at least one case in Warri, the team saw first-hand the effects of an investment in poor-quality DOCs, which led to reduced egg output and immediate decline of a farm of 10,000 layers.⁵⁹

The DOC distributors express that their major challenges are the scarcity of DOCs and the poor transportation between west and the region, thereby resulting in high mortality.

LIVE BIRD DISTRIBUTORS

They collect old layers and old parent stock from poultry farms to distribute to retailers in the LBMs. During festive periods, they also deal in broilers. They target farms which want to cull their entire flock, which usually lets them command better prices. The distributors are always better informed about market prices, and use this advantage to eke out the best price from poultry producers. The distributors are usually organized into associations.

COMMERCIAL EGG DISTRIBUTORS

Serve as a link between the commercial poultry farms and retailers. Some distributors also supply to institutions such as hotels, fast food outlets, and catering companies. It is common to find women in the egg distribution business. Distributors have close ties with farms within their locality, and maintain a record of which days that the farms sell their eggs (usually one day a week). They collect eggs from several farms, usually in quantities of 300-700 at a time, at a rate of NGN 650-700 per crate. The distributors then grade eggs into three categories; small, standard, and large. Eggs are sold between NGN700-800 per crate. Distributors often encounter problems with poor transportation, which leads to breakage.

IMPORTED CHICKEN DISTRIBUTORS

Despite Nigeria's ban on the import of poultry products, importers are doing steady business. A hub of these distributors is in Ijora, in Lagos. They source their meat

59 Okiakpo Farms, Warri



from Lagos and Ogun states, which have towns bordering Benin (large quantities of meat are smuggled into Nigeria from Benin). These distributors buy chicken in cartons,⁶⁰ and store the chicken in cold rooms. The chicken is then transported to different parts of Nigeria and sold to retailers, who then sell on to individual consumers, fast foods and hotels.

LIVE BIRD RETAILERS

The retailers are found in LBMs, with more men than women. Retailers purchase birds, both traditional and exotic, from bird distributors and small scale poultry farms, which they then sell to individual consumers. They deal in spent layers, broilers, and old parent stock. Individual buyers constitute the vast majority of customers.⁶¹ Institutional buyers, such as hotels and smaller fast food outlets also purchase meat from live bird retailers, particularly in urban areas. However, this is a small portion of the overall market.

In the Niger Delta, Benin, Sapele, and Owerri are known to be important areas for the purchase of birds from distributors. At times, retailers team up to buy birds brought into the open market by small-scale farmers, who may not have the staying power to make direct sales to consumer. This mechanism is used to limit the bargaining power of the farmers. Warri, market retailers are also known to source birds, particularly old parent stock, from Obasanjo farms, ZARTECH and Chi farms through distributors.

An average live bird retailer buys 50-80 birds in a month at a cost of NGN 800-NGN 900 for spent layers, NGN 1,200-NGN 1,500 for broilers, and NGN 2,000-NGN 2500 for old parent stock.

60 Each carton weighs approximately 10kg

61 Up to 90%



Prices depend on the maturity and weight of the birds. Cost of transportation, (which depends on the distance and the bargaining power of the retailer) is also factored into price. According to a market survey in Owerri, a LBM retailer sells 5-10 birds during the week and 10-20 bird during the week end. These numbers double during the festive periods, when the average price of chicken meat rises by up to 30%. Currently in Owerri, spent layers are sold at NGN 1,000-NGN 1,200, Broilers at NGN 1,500-NGN 2,000, while old parent stock sells at NGN 2,800 – NGN 3,000. After purchase, slaughtering services can be obtained usually within the same market, for a charge of NGN 100/bird.

LBM retailers also stock (where access to electricity is available), imported frozen chicken. This chicken competes directly with slaughtered live birds, and is preferred by lower income consumers since it is cheaper. Imported frozen chicken is sold at NGN 700/kg in Warri.

Though supermarkets were not explicitly analyzed within this study (as they do not constitute a large volume of poultry sales in the Niger Delta), it was learnt that dressed chicken in supermarkets retails for about NGN 850/kg.

EGG RETAILERS

Egg retailers are found in LBMs, and also in the form of ‘mom and pop’ stores⁶² near residential areas. With rising demand, the number of egg retailers has been increasing. There are notably more women than men involved in egg retailing. Retailers purchase between 10-100 crates from distributors and small-scale commercial poultry producers at a time. The sales price they receive in Warri, Sapele, and Benin is between NGN 5-700, and they then fetch a retail price of NGN 700-800. A single piece can be sold for NGN 20, 25, or 30, depending upon the size, and an average egg retailer sells 5-10 crates of eggs per day.⁶³ While the egg sales

62 Often referred to as ‘general stores’

63

Market visit, Owerri



take place throughout the year, it has been learnt that there is a scarcity of eggs in Warri during December. This is attributed to the fact that farmers time the culling of their old layer stock with Christmas, and therefore during the festive season itself the replacement batch of layers is still being reared.⁶⁴

IMPORTED POULTRY

As mentioned earlier, the import of poultry products, in live and frozen form, is banned in Nigeria. However, these products (particularly frozen chicken) continue to be smuggled into the country from Nigeria's neighbours, especially Benin and Togo. This chicken enters the country illegally, and evades the payment of duties. Unofficial payments to customs and border officials are made, and these are reported to be on the rise. Most of the frozen poultry comes either from Europe (Netherlands, France, Belgium), or Brazil.

The process begins with purchasing chicken meat at a cold storage facility in the neighbouring country, after which boxes of chicken are taken across the border by labourers. After clearing the border, the chicken is loaded onto trucks (or other vehicles) and moved into commercial hubs in Lagos and Ogun states (which share a border with Benin), for further distribution to other parts of Nigeria.

Frozen chicken meat usually consists of different grades of broilers. One such variety is called 'fryers.' Fryers are soft and can be cooked in a shorter time than other forms of chicken. For this reason, they are preferred by fast food outlets. Imported frozen chicken is sold between NGN650-700/Kg in the Warri market.

Imported chicken meat is often transported and handled without refrigeration, particularly when crossing borders on foot. There are also reports of hazardous chemicals being used to preserve frozen chicken. It is deemed the less-preferred



option due to the health and safety risks it poses, however, a market for it continues to exist due to affordability and availability.

POULTRY PRODUCERS

The FAO classifies poultry production systems into four categories; integrated and industrial producers, commercial (high), commercial (low), and village/backyard producers. Though designed with the primary objective of facilitating a discussion on bio-safety in mind, the categories work for the purposes of our analysis, with some modification.

SMALL COMMERCIAL POULTRY FARMERS

Small commercial poultry farmers keep between 1-5000 birds, and like their medium-sized counterparts, participate primarily in the egg value chain.⁶⁵ However, they too rear broilers around the festive seasons for extra income. They are different from traditional or free-range poultry producers, in that they operate with the explicit objective of earning an income from the sales of eggs and broilers. These farmers house their birds in cages or on deep litter and regularly administer feed, water, and medicine.⁶⁶

According to a study conducted by the FAO, the majority of such producers are located in the south of Nigeria,⁶⁷ and evolved from a backyard production system.

65 It is common to find retired bureaucrats, particularly veterinary services officers operating such businesses

66

(Akinwumi, Okike, & Rich, 2010, p. 9)

67 (Obi, Olubukola, & Maina, 2008, p. 17)



The study judges that this could be due to the fact that infrastructure required for commercial poultry production, such as electricity, is moderately more developed in the south.⁶⁸ Small commercial farms do periodically utilize the services of vets, including those from the local or state government if available. Such small producers are also known, however, to be more prone to diseases related to poor sanitary conditions on farms, such as fowl typhoid and fowl cholera.⁶⁹

Small commercial producers who engage in broiler production sell 20% of their produce directly to live-bird retailers, 40% directly to consumers, and 40% to distributors.

MEDIUM-SIZE POULTRY FARMERS

This category of farmers consists mainly of those engaged in the production of eggs as their main business, with participation in the meat business through the culling of old layers and seasonal rearing of broilers. An understanding of their operations has been developed through interviews with egg producers in Warri and Owerri.

Medium-sized poultry farmers can be expected to handle between 5-50,000 birds. The majority of farms purchase layer DOCs, rear them on their farms for 18-20 weeks, after which they lay for approximately 1 year, or 72 more weeks. Such farms are typically not vertically integrated, and maintain downstream and upstream relationships to source inputs and sell their stock.

Several relationships are of primary importance for such farmers. First is that with DOC distributors who supply them with pullets year-round and broiler DOCs before

68

Ibid.

69

(Obi, Olubukola, & Maina, 2008, p. 18)



the festive season. The health and output of layers depends upon the quality of DOCs, as does the growth rate of broilers. The purchase of sub-standard DOCs has serious ramifications, and can put farmers out of business.⁷⁰ Second, with the distributors of eggs and live birds (broilers and old-layers). Medium-sized farmers normally do not take their flock to the live-bird market themselves, and link to the individual and household market through distribution agents.

Furthermore, the farmers also interact closely with feed company distribution agents, vaccine providers, and vets. Though it is becoming more common for farmers to mill their own feed, medium-sized farmers remain amongst the main clients of established feed brands.⁷¹ The rise in feed costs is amongst their key concerns; however most remain unable to do anything about it since the raw materials are imported into the Niger Delta from Northern Nigeria, and in the case of soya meal, from abroad. Farmers also normally have standing relationships with private vets, who visit their farm periodically to vaccinate birds and check for disease. Farmers have been facing problems with the local availability of vaccines, and complain that the cost of imported vaccines is rising. They can be expected to comply with most biosecurity measures.

These farmers are also participants in the chicken meat value chain as they supply old layers and seasonal broilers to the LBM. They attempt to align the culling of their old layers with the festive season prices which can be up to 30% higher than average. The culling of old layers raises an important business concern for the

70 The negative effects of poor DOCs were seen in the case of Okiakpo Farms in Warri. The farm's egg output was seriously impacted by the purchase of poor quality chicks. By the time the farm's management realized the extent of the damage; significant costs had already been sunk into the chicks.

71 This separates them from large-integrated farms which typically have their own feed mills.

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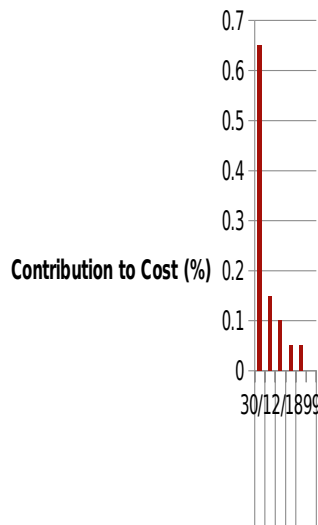
farmers. They must be able to time the purchase and rearing of new laying stock

Figure 6: Cost structure of average medium-size commercial egg producer

such



Cost Structure: Average Medium- size Commercial Egg Producer



that when the old layers are culled, a new batch is ready to take over their production. However, this is often not the case, and egg producers point out that sometimes this is due to the lack of access to finance.⁷² For broiler production, the farmers must maintain good ties with DOC distributors, since getting chick shipments in for the festive season is essential.

The majority of DOCs are produced in the southwest and shipped into the Niger Delta and our analysis shows that the price of chicks increases as one moves eastwards. Pullets at Obasanjo Farms in Lagos sell for NGN 120-140/bird, while the price in Owerri is between NGN 180-200/bird.

The major costs for a poultry producer include the fixed cost of the farmland, poultry houses and equipment. There are other variable costs which include DOCs, feed, water, vaccines and drugs, labour, and packaging material. A hidden cost

⁷² PAN Representative, Poultry Sector Stakeholder Workshop, Warri.



amongst these is that of bird mortality. Farmers pay for this at two stages, first, when DOCs are transported into the Niger Delta for sales, and later, when they the birds are being reared. The FAO estimates a mortality of between 8-10% for commercial layers.⁷³ The cost profile for an average farm is shown in Figure 8.

MEDIUM-SIZE INTEGRATED BROILER PRODUCERS

This category has been highlighted for broiler production, due to the potential for growth through developing the category's links with the catering industry. During the course of the study, 4 such farms were identified.⁷⁴ These establishments are located in the Niger Delta, while there is likely a greater number of such businesses located around the larger cities in the region, the sample has allowed us to understand their business models, constraints, and opportunities for growth.

Winnie Bounty and Darrel's Farms are two model establishments in this category. Both are located in Warri and are vertically integrated broiler producers. The farms are equipped with the following:

- Hatchery
- Production houses
- Meat processing unit
- Cold storage
- Transport trucks

Both farms are producing dressed, packaged broilers for sale to institutional buyers within Delta State. Winnie Bounty's main clients are two fast food outlets located in Ughelli. Darrel's Farm's has a wider clientele, consisting of hotels, catering companies, and fast-food outlets. Interestingly, Darrel's has been able to make an entry into the broiler market with catering companies, and its current clientele

73 (Adene & Oguntade, 2008, p. 52)

74 Winnie Bountry Farms (Warri), Darrel's Farms (Warri), Mintel Farms (Port Harcourt), Urban Farms (Owerri)

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consists of some of the smaller contractors including UNITOP Catering, Universal Catering, Godecki, Alifun, and Homegate. Both Winnie Bounty and Darrel's believe that there is an opportunity to sell more to catering companies, but they have not yet been able to access this market in a robust manner. Winnie Bounty's current production level is 11 tonnes of broiler meat per month, whereas Darrel's is currently producing almost 19 tonnes of meat per month.⁷⁵ 74% of Darrel's production is from on-site activities, while a 26% of their production comes through an out grower scheme which they have established.⁷⁶ Winnie Bounty is currently selling packaged chicken at NGN 770/kg, while Darrel's is priced at an average of NGN 750/kg.⁷⁷

Both producers have established their own hatcheries. Winnie Bounty's hatchery has a capacity of 90,000 DOCs/month, while Darrell's has a capacity of 60,000 DOCs per month. In the case of Winnie Bounty, it was found that the hatchery has been utilized to produce enough chicks for the farm, but has not been running at full capacity. Darrel's, however, has put in a hatchery earlier this year, and is producing

⁷⁵ Production cycles are 8 weeks.

⁷⁶

In May this year, Darrel's Farms started an outgrower scheme with initial participation from 10 farmers. These farmers are rearing and selling back 7,000 broilers every two months. Darrel's has supported them through the provision of production training, access to their vet, and feed on credit.

⁷⁷

Darrel's varies the prices by client.



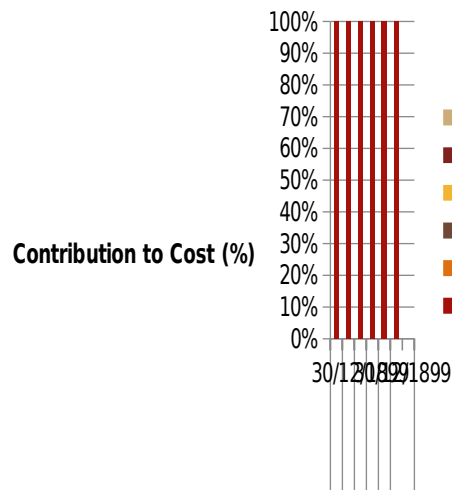
more DOCs than it requires for its own consumption. The remaining chicks are being sold to distributors and small scale farmers around Warri.

Both farms produce their own feed and have feed mills on site. This is representative of other medium-large sized farms across the Niger Delta. Issues of trust and quality contribute to the decision of the farms to produce their own feed. Winnie Bounty's managers have had a bad experience in the past and believe that feed bags are often tampered with by distributors. Darrel's Farms believes that it is able to produce feed of a quality better suited to its birds than branded feed manufacturers. Therefore, even though their own feed costs slightly more than the equivalent branded feed, they continue to produce it themselves.⁷⁸ To produce their own feed, both farms have to maintain links with raw material manufacturers in northern Nigeria. The main ingredients they purchase are maize, wheat bran, and soya meal.

⁷⁸ NGN 105 versus NGN 97 per kg.



Cost Structure: Medium-sized Integrated Broiler Producer



An important feature of these medium-sized broiler producers is that they have invested in their own processing units. Winnie Bounty's facility enables it to process 5,000 birds per day, and is semi-automatic, with some functions being performed manually. Darrel's Farms has a fully automated processing unit, with the ability to process 1,000 birds per hour, or approximately 10,000 birds per day.⁷⁹ Both farms have a cold storage on premises, with a capacity of 15 tonnes. Darrel's also own a cold warehouse in downtown Warri, which the owner uses as part-storage and part wholesale outlet for chicken meat, fish, and beef.

Figure 7: Cost structure of a medium-sized integrated broiler producer

Darrel's Farms is expanding and investing in further vertical integration through the establishment of a breeder's farm on the outskirts of Warri. The farm will house

⁷⁹ The processing unit was just put in place and will become operational in one month.



parent stock and provide broiler eggs for their hatchery.⁸⁰ Winnie Bounty is keen to grow, but has yet to find the right balance between production and the sales it is able to make through established relationships. The farms identify the rising cost of feed, lack of a regular electricity supply, and the high cost of access to finance as amongst their constraints. Darrell's is able to continue investing in its own expansion, but Winnie Bounty believes it will require external investment capital to expand. Given the fact that both farms have the capacity in their hatcheries and processing units to handle a larger volume of birds, their first stated investment priority is the expansion of hen houses. Both farms recognize catering companies and fast food outlets as markets in which they could increase sales, and are exploring strategies for doing so. Depending upon the soundness of their business models, there could also be other market opportunities for such producers, which merit further investigation:

- Expanding the sales of DOCs through the hatcheries into a major product line
- Utilizing excess processing capacity to process birds from other broiler producers within proximity. This could be done through an outgrower's scheme or through establishing links with small and medium sized producers who currently do broilers on a seasonal basis.
- Expansion of outgrower's schemes. Darrell's has been able to start-up an outgrower scheme and Winnie Bounty is interested in one. They have submitted a proposal to the Delta State government, requesting them to link them to farmers in the state's various local governments.

LARGE-SCALE INTEGRATED PRODUCERS

Large-scale commercial producers of poultry products have vertically integrated operations, and perform almost all functions along the poultry value chain. A small number of such producers exist, and their operations are concentrated in the southwest of Nigeria. Nine major producers, presented in a list from the FAO below, are responsible for 70% of the poultry sector:⁸¹ Large producers deal in upwards of 80 Currently eggs are purchased from the market, at NGN 80/egg

81 (Adene & Oguntade, 2008, p. 13)



50,000 birds, with the largest farms having a capacity of 250,000 birds. About 75% of Nigeria's broiler production is done by medium-large commercial farms, while 25% is handled by small commercial producers.⁸²

The FAO estimates that large-scale integrated producers account for over half of domestic egg production. 20% of this amount is exported, 70% is sold directly to institutional clients including restaurants, hotels, companies, and supermarkets, while the remaining 10% enters the LBM through distributors. This means that a significant share of eggs in live-bird markets is supplied by small and medium-sized commercial egg producers, who sell on to consumers. As stated earlier, almost 90% of egg sales from LBMs are made to individual buyers, with the remainder going to institutions.⁸³

Table 3: Large integrated farms in Nigeria. Source: PAN, via FAO Poultry Sector Country Review, 2008.

Company	Location	Products
Obasanjo Farms Nigeria Ltd.	Ogun State	PS DOC, Equipment, Broiler DOC, Layer DOC, Frozen Chicken, Cockerels
CHI Ltd. (AJANLA Farms).	Oyo State, Lagos State	PS DOC, POL Pullets, Broiler DOC, Emus, Pullet DOC, Equipment, Table eggs, Drugs, Cockerels
Avian Specialties Ltd.	Oyo State	Broiler DOC, Pullet DOC, Eggs, Frozen Chicken, Cockerels
ZARTECH Farms	Oyo State	Broiler DOC, Pullet DOC, Eggs, Feeds, Cockerels
AMO Farms	Oyo State	Broiler DOC, Pullet DOC, Eggs, Feeds, Cockerels

82

(Akinwumi, Okike, & Rich, 2010, p. 38)

83 (Akinwumi, Okike, & Rich, 2010, p. 56)

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TUNS Farms	Oshun State	Broiler DOC, Pullet DOC, Eggs, Frozen Chicken, Feed concentrates, Cockerels
LIPAKALA Farms	Ondo State	Broiler DOC, Pullet DOC, Eggs, Dressed Chicken
S&D Farms	Ogun State	PS DOC, Broiler DOC, Pullet DOC, Eggs, Dressed chicken, Cockerels
NIYYA Farms	Kaduna State	DOCs, Eggs

The operations of large producers begin with the import of grandparent stock, which is then used to produce parent stock and eventually broiler and layer DOCs. Part of the parent stock DOCs and broiler and layer DOCs are sold to other producers and distributors, while the remainder is kept for the farm's own production. Large producers rear broilers and layers using modern techniques, such as climate controlled hen houses, technically advanced equipment, water systems, and on-site vets. They also invest in bio-security measures, and monitor staff and equipment hygiene. After rearing the broilers and layers, the farms then sell products on to distributors and institutional buyers.

The main advantage of large-scale producers is their highly-integrated operations. They often have automatic feeding, watering, egg collection, sorting, slaughtering, packaging, waste collection and treatment facilities. These are usually managed by well-trained technicians. They also have equipment for processing and packaging chicken meat, which they then supply to institutional buyers, sell to distributors, or sell through their own meat shops and outlets. To cater to different types of consumers, they cut up and package meat into different sizes and parts.⁸⁴ Meat products include sausages, chicken patties, and chicken pieces.

Most large-scale farms manufacture their own feed and have their own feed mills.⁸⁵ As a result of utilizing inputs efficiently, large-scale producers are able to achieve

⁸⁴ A sample product and price sheet is given in Annex D.

⁸⁵ They sometimes utilize concentrate from established feed manufacturers



economies of scale for eggs and meat, and therefore price their products competitively.⁸⁶

LIVE BIRD MARKETS

LBM s are the main avenue for consumption of poultry meat and eggs by Nigerian individuals and households, and as such, reflect their purchasing capabilities and preferences. While individuals account for 90% of sales in the market, other buyers such as bakers, event organizers, hotels, and institutional buyers also frequent LBMs. According to the FAO, LBMs across the country are similar, and are found within general markets.⁸⁷ The area where birds are kept is connected with the rest of the market, and generally birds of several sizes and species can be found.⁸⁸ In the case of chicken, both exotic and traditional breeds of chicken are available in the market. The markets are normally not regulated; however, local government councils may charge participation fees from retailers. The two main market functions that take place in LBMs are retailing and processing of birds. Supporting veterinary services can also often be found. Birds are kept in either wooden or steel cages, which are usually home-built and not easy to clean. Healthy and sick birds can often be found in proximity of each other, making, along with other reasons,

86

(Akinwumi, Okike, & Rich, 2010, p. 24)

87 (Pagani, Abimiku, & Emeka-Okolie, 2008, p. 17)

88

Visit to Ibudu market in Warri.

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LBM is an at-risk area for transfer of various kinds of poultry-related diseases.⁸⁹ The major market actors involved in LBMs include live bird retailers, egg retailers, and small-scale commercial farmers. The products on sale include broilers, spent layers, cockerels, turkeys, old parent stock, imported frozen chicken, and eggs. There are two types of LBMs; daily markets and weekly markets.

DAILY MARKETS

These markets work on a daily basis throughout the year. They cater to urban and semi-urban consumers who purchase meat and eggs for household consumption, sacrifices, and for festive season-related consumption. In markets in the South, spent layers, traditional chickens, and parent stock are commonly available, and broiler availability increases during the festive season.⁹⁰ Retailers are often organized into associations, which regulate the number of retailers and birds available in the market. They also serve as platforms for sharing information, and organizing collective purchase of meat and eggs from distributors and traders. Such associations are usually independent, and without links to associations in other markets.

WEEKLY MARKETS

Weekly markets, while not always running on a seven day schedule (they are often convened once every 4 or 5 days), are a forum for rural, small-scale, and backyard producers to sell their poultry products. They are a mechanism for rural producers of various types, to sell birds (traditional birds and old layers) and eggs to collectors

89

Since 2007, the World Bank has been supporting the Federal Ministry of Agriculture and Water Resources to keep live bird markets clean through the public veterinary system. However, the FAO reports that the programme has not had the desired effect due to shortage of equipment and personnel.

90 (Pagani, Abimiku, & Emeka-Okolie, 2008, p. 23)

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and middlemen, who then sell on to urban markets. It is rare to find commercial birds in the weekly markets, which usually showcase poultry products from the surrounding geography. However, most of the eggs traded in weekly markets are of the commercial variety. Collectors and middlemen, who act as purchasing agents in the weekly markets, often themselves perform the retail function in daily markets. They collect birds and eggs, transport them, and then sell in the daily markets. Unlike daily markets in the south, weekly markets usually do not have a strong presence of associations, and the actors involved engage as independents.

PROCESSORS

Processors are essentially butchers who play an important role in the functioning of the LBM for poultry meat. They are present, either alone or in groups, inside or close to LBMs. During this analysis, processors were found to be charging an average fee of NGN 100/bird for slaughtering and cleaning. Most Nigerians purchase live birds, have them slaughtered, and take them home.

The operating equipment for processors includes tables, water-holding drums, boiling pots, and knives. They slaughter chickens, dip them in hot water, de-feather them, and then cut them into pieces according to a customer's instructions.⁹¹ Processors often operate in unhygienic conditions.

As the final link between consumers and meat producers, the processing function is important since once the birds are ready for the market, each extra day they must be fed causes the loss of expensive feed.

The processing function is also performed by medium-large scale integrated broiler producers, who slaughter birds in their facilities, clean, cut and freeze them in preparation for delivery.

TRANSPORTERS

Transporters provide mobility to different products in the value chain. They bring DOCs from the Southwest to distributors and small and medium-sized poultry farmers inside the Niger Delta. They also carry other inputs such as feed, cages,

91 (Obi, Olubukola, & Maina, 2008, p. 16)



wood shavings, and waste between businesses. Finally, they move live birds, eggs, and packaged broiler meat to end markets.

In general, specialized vehicles are not used for transportation, and birds are often thrown in with passengers. This contributes, in particular, to the loss of DOCs during travel.⁹² Since transporters do not take ownership of the birds, they are not accountable for the loss of birds and the cost of lost birds has to be absorbed by buyers.

CHANNELS

The actors within the meat and egg value chains can be organized into the following four channels for analytical purposes. The actors in both chains are visually represented in the value chain maps in the next section.

CHANNEL 1: SMALL COMMERCIAL

Serves the individual and institutional end markets for eggs, and the individual market for meat. The channel is characterized by thousands of small-scale commercial poultry producers in the Niger Delta, who produce eggs and rear broilers on a seasonal basis. They operate intensive production systems, but are not advance in their utilization of feed, and other key inputs including medicine. A key aspect of this channel is that, for both eggs and broilers, distributors who act as middlemen between farmers and LBMs, play an important role. The operations of small-scale commercial producers are often self-financed, and they have difficulty obtaining credit. This channel has been growing since demand for poultry products is on the rise, and egg production with limited start-up capital expenditure.

CHANNEL 2: MEDIUM COMMERCIAL

This channel also serves the individual and institutional markets for eggs, and the individual market for meat. However, it is distinguished from Channel 1 by virtue of more intensive production, and better feeding, health, and quality control techniques. The channel consists of medium-sized commercial producers, who are also primarily in the egg business, but rear broilers seasonally. Since they

⁹² Chicks are vulnerable to death under stress.



do not have their own hatcheries, the producers in this channel, like Channel 1, rely upon commercial hatcheries in the southwest to supply them with DOCs. Unlike Channel 1 however, a larger proportion of producers in Channel 2 are able to obtain their DOC supply directly from large hatcheries, rather than through distributors. This channel also moves a large volume of its produce through egg and live bird distributors. It is expanding in proportion to the growth in demand for chicken meat and eggs.

CHANNEL 3: MEDIUM COMMERCIAL-BROILER

In the meat value chain, Channel 3 is a nascent channel which consists of specialized broiler producers aiming to sell processed, packaged meat into institutional end markets such as catering companies, fast food outlets, and hotels. The producers in this channel display a degree of integration similar to large industrial producers, but on a smaller scale and with less efficient operations. Channel 3 producers have hatchery operations and sell excess DOCs to distribution agents and other poultry producers. This is a fairly new development. Additionally, Channel 3 meat producers offer the advantage of having local ownership and operations, which may be attractive to certain institutional buyers such as catering companies, looking to increase their local content on catering contracts with oil and gas companies. Channel 3 does not exist in the egg value chain.

CHANNEL 4: LARGE COMMERCIAL

This channel consists of up to ten large-integrated producers of poultry products, who cater to important institutional end markets inside the Niger Delta, as well as the individual market. The channel is also linked with Channels 1 and 2, since it is the main supplier of layer and broiler DOCs for small and medium-sized farmers. Eggs produced within the channel are sold to institutional buyers, as well as distribution agents who supply retailers in LBMs. The channel is the main supplier of broilers to fast food outlets, catering companies, and hotels. In particular, large-integrated broiler producers have a near-complete hold of the market for chicken with catering companies. There are signs that the channel is growing. For example, Obasanjo Farms recently launched a 60,000 bird laying farm near Asaba. On the broiler production side, there is growing demand for chicken meat from fast food companies and the individual markets, which likely means expansion of meat production in Channel 4 in the future. Additionally, Channel 4

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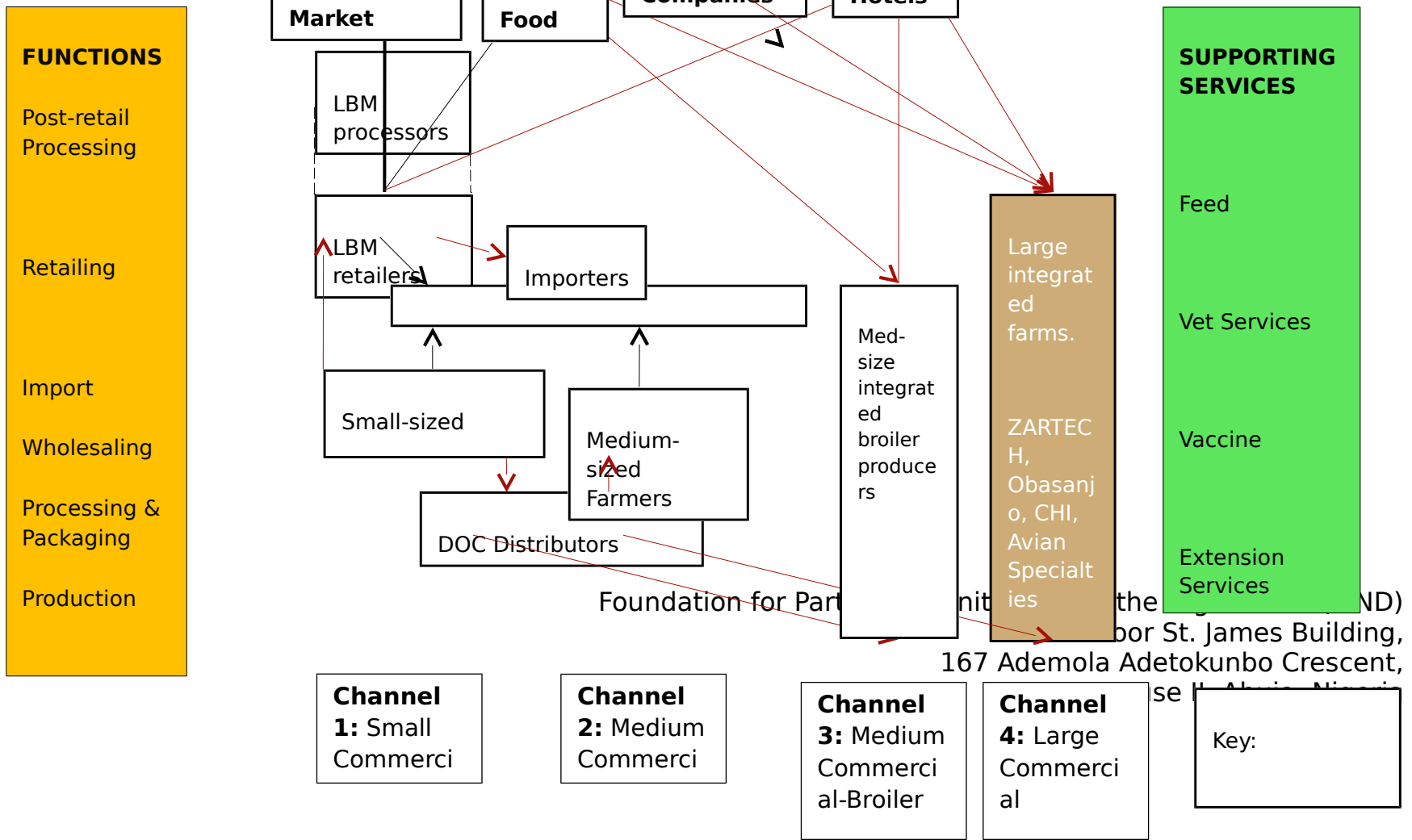


producers have very large hatcheries supplying the majority of DOCs consumed by small and medium sized farmers. Channel 4 is also characterized by its use of advanced bio-security measures, and it is technologically the most advanced, with a range of automated processes in use.⁹³

93 For hatching, feeding, medical care, processing, and packaging.

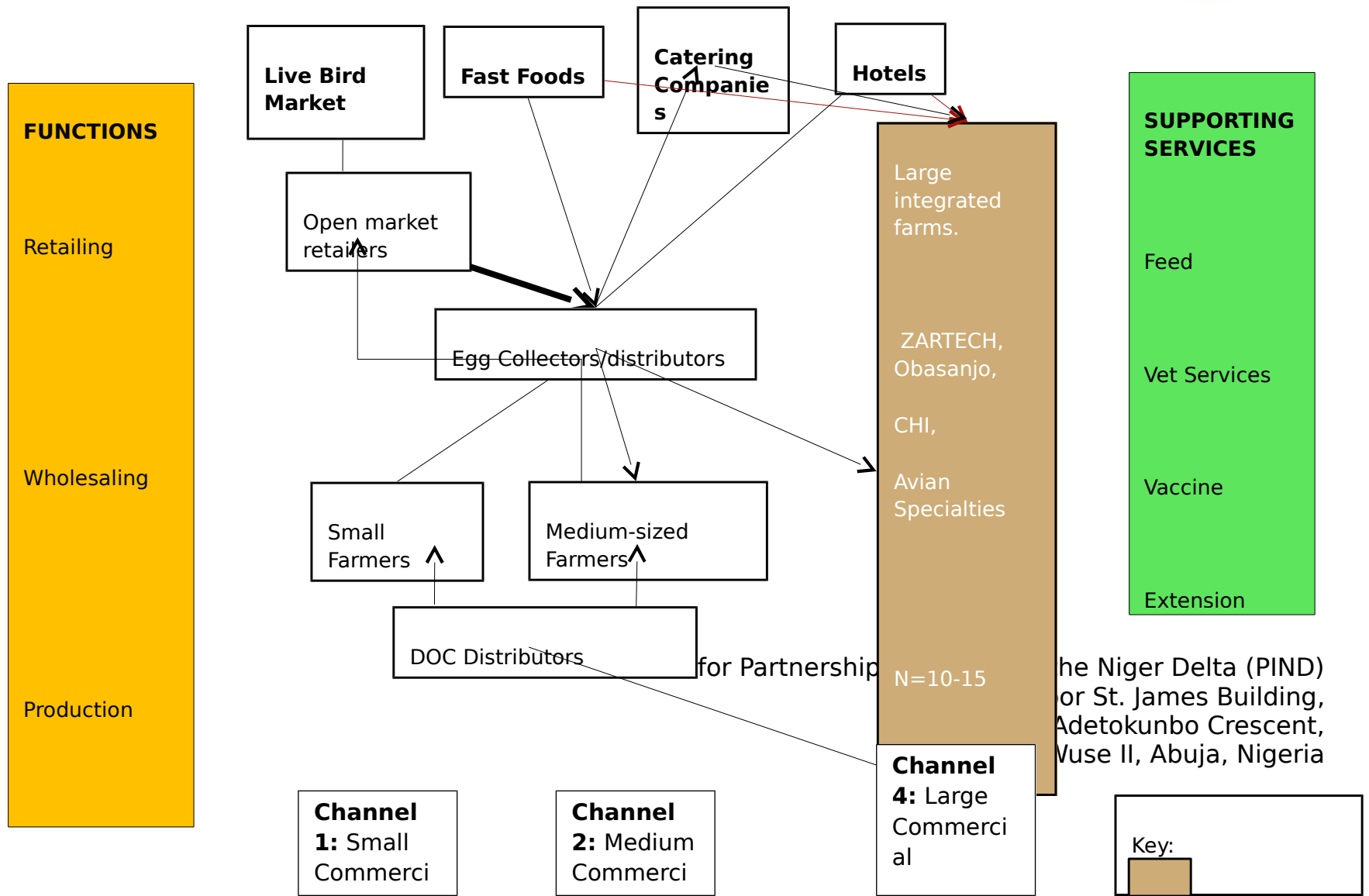


STRUCTURE: CHICKEN MEAT VALUE CHAIN





STRUCTURE: CHICKEN EGG VALUE CHAIN





LINKAGES

There is limited coordination amongst actors in the poultry sector in the Niger Delta, which is reflective of the broader industry nationwide.

VERTICAL LINKAGES⁹⁴

Vertical integration is not commonly seen in the poultry industry inside the Niger Delta. Most poultry farmers, whether in the egg or broiler production, concentrate solely on production, and rely on other market actors for input supply and getting goods to market. Some producers enter into feed manufacturing to try and control costs, but the ability of farmers to engage in feed production increases as one moves from Channel 1 to 4. Overall, however, producers in Channels 1 and 2 have limited influence in the value chain. They exist in large numbers, particularly egg producers, but are independent and have little control over the prices of inputs and outputs. This is in part due to weak horizontal cooperation.

Actors with the greatest influence in the value chain are the distributors of live birds and eggs. This is due to the fact that they form a bridge between production and retail. Resultantly, they are also the best informed about what the market requires, and the individual circumstances of the producers who are within their net. This can sometimes lead them to apply undue pressure on producers, particularly those who are looking to sell old layers and broilers. If a farmer is looking to sell birds quickly, and is completely reliant upon live bird distributors, they can pressurize him or her to sell at low or unreasonable prices, citing market conditions. Given the fact that producers lose money each

94 (Akinwumi, Okike, & Rich, 2010, p. 22)



additional day that market-ready birds (broilers and old layers) have to be fed, they often comply. Egg producers are slightly more difficult to coerce, since the shelf life of eggs, if stored at the correct temperature, is two weeks. When faced with such situations, farmers try to bypass the problem by switching distributors or going straight to live-bird markets. However, those two options can also be problematic; in the case of the former, it is known that the number of distributors is limited, and they are known to quarrel amongst each other to protect relationships with farmers. In the latter case, farmers can face difficulties if they are unfamiliar with the live-bird markets or don't have established relationships with retailers. It has been observed that retailers too, can collect together to try to exact low prices from farmers.⁹⁵

Live-bird distributors also exert influence over retailers and have control over the prices that retailers get. The influence is derived in part from the fact that distributors also supply credit (in-kind) to retailers, allowing them to pay them once the birds have been sold. Rather than good vertical cooperation, relationships are often contentious.

A second set of influential actors are DOC distributors who control the supply of chicks from hatcheries to small and medium-sized producers in the Niger Delta. The relationship between them and producers is crucial, since poor-quality DOCs, or DOCs delivered at the wrong time, can have serious ramifications for egg and broiler producers. For smaller producers, a batch of low-productivity DOCs can put the entire operation at-risk. The findings indicate that DOC distributors charge high markups for linking hatcheries in Ibadan to producers in the Niger Delta. Additionally, while they patronize medium-large producers, they can often be unresponsive to small farmers, and delay servicing them till their large contracts are met. As a result, smaller farmers often have to scan the market hard, particularly

⁹⁵ Observed behavior in the live bird market in Owerri.

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when trying to get broiler DOCs in time for the festive season. Farmers also have no control over the price of DOCs. The situation becomes exacerbated as one moves east along the Niger Delta, and further from Ibadan, the source of the chicks. DOCs are also available in Imo state, but these are reputed to be of poor quality. They are known popularly as 'Owerri Birds,' and are produced either by small-scale hatcheries or by ageing state-owned farms.

In Channels 3 and 4, since the producers are able to make direct sales and rely primarily on institutional markets, the influence of live-bird distributors is limited. Also, in this case, Channel 3 and 4 producers usually have their own hatcheries, and are therefore not dependent upon DOC distributors. Rather, DOC distributors are dependent upon them for their supply.

HORIZONTAL LINKAGES

Relationships amongst firms in the poultry industry are not strong in Nigeria, and the same can be claimed for the Niger Delta. The role of associations is limited, given the overall potential of the industry. The Poultry Association of Nigeria (PAN) is the main representative body for poultry actors in Nigeria, and in 2010, it was reported to have a strength of 1,000 members.⁹⁶ The Association also has representation from two other associations – the Live Bird Traders Association of Nigeria (LTAN), and the Egg Traders Association of Nigeria (ETAN).

The composition of PAN members consists of poultry farmers (70%), feed millers (10%), live bird traders (10%), hatchery/breeders (5%), and input suppliers (5%). It is reported that only a fraction of poultry farmers are members of PAN, and it is generally perceived as an organization of the biggest producers, formed to further their political and

96 (Akinwumi, Okike, & Rich, 2010, p. 33)



business interests. Expectedly, membership is concentrated in the Southwest, with over 60% of members hailing from Lagos, Ogun, and Oyo. The Association charges different annual subscription fees depending upon the size of production. NGN 5,000 for small-scale farmers and between NGNG 100,000-1,000,000 for large producers. However, only about 30-40% of members pay annual dues, which an indicator of the perceived value of the association. The Association engages in the following general activities on behalf of its members:

- Information on bird and disease management
- Supply and demand requirement of meat and eggs
- Fights negative publicity about poultry industry
- Pursue claims against hatcheries who sell poor DOCs
- Negotiations with government and cooperation with international organizations

Forms of negative cooperation are seen when DOC distributors try to cheat small and medium sized farmers by providing sub-standard chicks. Poor cooperation is also seen when retailers collude to bring down the prices paid to small farmers when they visit LBMs on 'market days.'

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SUPPORTING SERVICES

FINANCIAL SERVICES AND INSURANCE

Reflective of access to finance for agriculture nationwide, the situation inside the Niger Delta is challenging. In a majority of cases, the first problem cited by producers is access to finance, and banks are blamed as being at the root of the industry's most serious problems. The reality is more complicated. Commercial banks are regulated by the Central Bank of Nigeria, and have traditionally had high lending rates. Due to this, they have traditionally preferred lending to quick turnaround industries, such as trading, which can afford their rates, and return principal within a relatively short time. Banking products have not yet evolved sufficiently to meet agricultural needs, and producers regularly complain that the payback period offered by major banks, which include Zenith Bank, First Bank, and Diamond Bank, are too short.⁹⁷ Bank's however, respond to this allegation by claiming that producers need to optimize their business operations such that they can afford the high lending rates.⁹⁸ They advise farmers to utilize loans only for catalytic purposes, carefully assessing where supplemental funding can add the greatest value to their production cycle. The farming community counters this by claiming that banks do not understand agricultural

97 Poultry sector stakeholder's meeting, Warri

98

In October 2012, the rate offered by Diamond Bank to a medium-scale broiler producer in Warri was 24% p.a.

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business models, and are unwilling to put in the effort to do so. The banking community cites that the final rates offered to consumers are not entirely within their control, and that the majority of the bank's assets come from short-term deposits, which cannot be lent on for lengthy time periods that poultry producers have in mind. Banks also point out that producers often approach them without adequate paperwork to explain investment priorities against funding requested. Despite being confronted, they are often unwilling to put in the work required.

A 2010 evaluation of funding requirements in the poultry value chain by UNIDO revealed the following:

	<i>Feedstuff industry</i>	<i>Traditional poultry sector</i>	<i>Commercial poultry sector</i>	<i>Industrial poultry sector</i>	<i>Marketing, wholesale retail</i>
Need/ Purpose	Working capital	Working capital, equipment	Working capital, equipment, vehicles	Working capital, fixed assets (plant), equipment, vehicles	Fixed assets (wholesale warehouses/ storage)
Volume needed	high	high	high	low	low
Risks	low	high	medium	low	low
Interest	low	low	Low	low	high

Figure 8: Poultry funding requirements. Source: UNIDO Working Paper 'Unleashing Agricultural Development in Nigeria through Value Chain Financing,' 2010.

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The commercial poultry sector ranked high on the volume of finance required for working capital, equipment, and vehicle needs, medium on risk, and low on required interest rates.

The federal government has been trying to improve the availability of financial services for poultry producers. The government has agricultural lending through commercial banks. However, this has been controversial since the funds are channeled through state governments, for lending on to poultry producers, and the minimum amount of loan has been set such that only a few large producers can be eligible for it.

Most small farmers rely on self-financing and loans from cooperatives rather than loans from the commercial banks, as they find it difficult to meet lending conditions. Some of these conditions include; collateral (usually land), 25% interest rate per annum, and 3-6months moratoria before commencement of payback.⁹⁹. Larger commercial farms have less difficulty in meeting these conditions, and are therefore able to access loans.

The Nigerian Government has also made an effort to increase the coverage of agricultural insurance, through the National Agricultural Insurance Corporation (NIAC). Established in 1988, NIAC administers the Nigerian Agricultural Insurance Scheme (NAIS), which protects farmers of all sizes in the advent of an emergency or natural disaster. The coverage of the scheme includes poultry farmers. The Scheme subsidizes insurance for farmers using funds from the state where the farm is located. However, the scheme has also faced difficulties, and a perception exists that larger farmers are the ones who are really able to benefit from it, as they are able to meet the conditions set by banks which provide agricultural credit. Moreover, participation of farmers in agricultural insurance is low, and there is a

⁹⁹ (Sahara Reporters, 2009)



general lack of awareness about how the scheme actually functions, which has led to skepticism amongst farmers regarding the payment of claims. The Scheme is also known to have faced funding problems in the past.

FEED

Feed is a critical input for poultry production, and makes up to 60-70% of the cost of production of broilers and eggs. In the 1980's, there were fewer than 5 feed companies that handled most of poultry production in Nigeria, and 90% of farmers depended upon commercial feed.¹⁰⁰ However, the landscape has undergone change since then, and farmers are now more knowledgeable, and more farmers have begun to produce their own feed. The FAO estimates that only about 40% of poultry farms are now dependent upon commercial feed.¹⁰¹ Discounting the production of feed by vertically integrated farms, there are two categories of independent feed manufacturers in the industry.

LARGE, BRANDED FEED MILLERS

There are currently approximately 10 large feed manufacturers in Nigeria. The most important brands are Top Feeds, Animal Care, and Grand Cereals. Below is a list of the larger manufacturers and their locations:

100 (Akinwumi, Okike, & Rich, 2010, p. 12)

101

Ibid.



Table 4: Major feed manufacturers in Nigeria. Source: FAO Country Review, Nigeria, 2008

Company	Location	Products
Feed Masters Ltd	Kaduna State	Poultry Feeds, Concentrates
Grand Cereals Ltd	Plateau State	Poultry Feeds, Concentrates
FACCO W. Africa Ltd.	Lagos State	Equipment, Incubators, Turkey projects
Bendel Flour Mills Ltd.	Edo State	Poultry Feeds, Concentrates, Drugs
Top Feeds Ltd.	Delta State	Poultry Feeds, Concentrates
Animal Care Konsult	Ogun State	Broiler DOC, Pullet DOC, Eggs, Frozen Chicken, Feed Concentrates, Cockerels
Niyya Farms Ltd.	Kaduna State	DOCs, Eggs
Several medium and small-scale holdings nationwide	Nationwide	Eggs, Feeds, Drugs, Equipment

Of these, TOP Feeds and Bendel Flour Mills have their head offices in the Niger Delta. A detailed interview with Top Feeds helped to inform this analysis about the dynamics of the feed market inside the Niger Delta. According to Top Feeds, the market for poultry feed in the Niger Delta is growing, and therefore they are investing in expansion of their production. The company currently has two factories – one in Sapele, another in Ibadan, and is looking to invest in a third in Kalabar. Top Feeds' total current output is at the Sapele Factory is between 4-500 tonnes of feed/day, and the company estimates that the size of its market in the Niger is between 12-14,000 tonnes. To produce this

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amount, Top Feeds purchases 12-14,000 tonnes of raw material every month, for which the three main ingredients are soybean, maize, and wheat bran.¹⁰²

Sourcing raw materials for production remains the most important challenge for feed companies. Nigeria is deficient in soya and wheat production, and has to import large quantities of both.¹⁰³ Maize, though, is produced in large quantities in Northern Nigeria, with the two major mills located in Jos and Ogun. However, maize experiences significant fluctuation in prices, in particular due to instability in the north.

Other factors that influence feed production include shortages in DOC supplies, disease outbreaks, or government policies. Feed is usually sold in 25 kg bags, and Top Feeds estimates that while it costs on average NGN 150 more than its competitors, that its product is better and leads to gains in output which cover the investment. The prices for two of feed's key raw materials were obtained from Obasanjo Farms in Asaba are illustrated in Figure 11.

102 Interview with Mr. Wolfgang Buge, Regional Manager East, Top Feeds.

103 (Lyddon, 2011), 4 million tonnes of wheat in 2010.

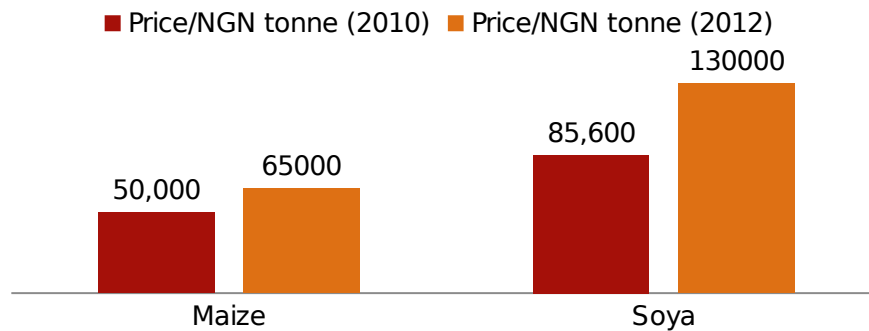


Figure 9: Price of raw materials in Asaba, 2010 and 2012. Source: Obasanjo Farms, Asaba.

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Price of Feed Raw Materials in Asaba, 2010 & 2012



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The prices concur with the producers' claim that feed prices are rising quickly. Maize has experienced a 30% increase between 2010 and 12. Similarly, soya prices have risen 52% since 2010. Additionally, the above prices are ex-factory. It takes another NGN 7,000/tonne to transport Maize from Jos in Northern Nigeria, to the Niger Delta.¹⁰⁴

The two most important market actors for feed companies include small and medium-sized producers of poultry, the suppliers of raw materials, and the transporter who shuttle grain in between the three actors. Given the strength of this linkage, the effects of changes in demand and supply are felt quite directly – a drop in the market demand for chicken meat and eggs reduces demand for feed, and increase in the prices of raw materials flow through to poultry producers and result in an increase in the price of birds and eggs.

Feed manufacturers are also an important source of value chain finance, since they are able to give credit to hatcheries as well as to poultry producers. Given the difficulty of obtaining commercial finance, this function is welcomed in the market.

104 Interview with Obasanjo Farms.



TOLL MILLERS

Toll Millers operate small grinder-mixers, producing between 1-2 tonnes/hour, and account for 60% of Nigeria's feed market.¹⁰⁵ They are highly concentrated in the southwest, and therefore not as visible in the south-south and southeastern part of the country. Toll millers normally target small and medium-sized commercial producers within their geographic proximity, and offer them more control over their feed mixtures. Farmers usually provide their own ingredients, specify the mix, and pay a fee for services.

VETERINARY SERVICES

While rural poultry across Nigeria is particularly vulnerable to disease,¹⁰⁶ most commercial poultry producers do invest in varying degrees of bird medication and veterinary services. The use of veterinary services amongst small-scale producers is limited, and they are often known to consult unqualified veterinary doctors. Larger commercial producers tend to follow vaccination guidelines, and take bio-safety measures (such as using clean equipment, checking for contaminated feed, and quarantining sick birds) through consulting private vets. Large integrated producers employ their own full-time vets.

Veterinary service provision can be split into public and private categories:

105 (Akinwumi, Okike, & Rich, 2010, p. 12)

106 Newcastle's Disease is the leading cause of rural poultry death.

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- Public sector veterinarians from state livestock departments are responsible for visiting farms to monitor bio-security. Each state is meant to have both federal and local government livestock officers. Their main responsibility includes surveillance, prevention, and control of variables which could spread disease and/or create health risks for consumers. However, the general perception is that the public veterinary system is weak and these officials are rarely available to engage with producers.
- Private veterinarians include trained veterinary doctors. Public sector animal health officers who can also be found working as part-time consultants. Private vets engage more in treatment of flock and perform such functions as: maintenance of bio-security measures at farms, managing the vaccination schedule, and medicating sick birds. They are usually found in urban areas.¹⁰⁷

The majority of clients for veterinarians come from medium and large-sized producers. In Imo State, a private veterinary service provider can expect to be paid an average of NGN 20,000 per month for eight visits to a farm. Discussions show that on average, a veterinarian can handle up to five different farms in a month. This amounts to N100,000 per month for their services. The cost of vaccines and medication is separate, and is paid for by producers. Veterinarians usually procure their drugs and vaccines from representatives of vaccine manufacturers in urban areas.

Unfortunately, the availability of veterinary services in the country is limited. A baseline survey conducted in December 2007 for the 'Avian Influenza Control and Human Preparedness and Response Project' stated that the ratio of registered veterinary clinics to farms in urban areas was 1:400, while it was 1:500 in rural areas. The survey

¹⁰⁷ For the density of veterinary clinics per state, see Annex G

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further went on to state that there access to veterinary facilities in rural areas was very limited, and that most clinics did not meet standards set by the international Organization for Animal Health (OIE).¹⁰⁸

VACCINES

The demand for poultry vaccines in Nigeria is met either by the National Veterinary Research Institute (NVRI)¹⁰⁹ in Vom, or by imports. NVRI has one sales outlet in every state, however, the supply process is known to be lengthy and at times unreliable.¹¹⁰ However, NVRI's operations are considered to be of good standard, and it employs qualified professionals.

108 (Environquest, 2007, p. VI)

109 <http://www.nvri.gov.ng/>

110

PropCom Mai-Karfi Poultry Health Analysis



Imports in the market come in from Europe, Israel, China, and India, and are priced competitively against local brands. Animal Care and Turnerwright are two examples of companies which deal in vaccine imports. NVRI has been unable to keep pace with the increase in demand for vaccine in the country, which has increased the demand for imported vaccines.¹¹¹

Need something on actual distribution and outreach to the rural areas, as well as the implications of losses from NCD – 20%?

EXTENSION SERVICES

The main source of extension services in the Niger Delta is through a federal program for the provision of extension services called the Agricultural Developments Programme (ADP), which has been in place since 1975. It is funded by the Federal Government, in conjunction with state governments, and used to receive World Bank funding in the past.

Staff members of the ADP are posted to communities around the country as extension agents. They focus in particular on rural poultry, where the need for technical assistance is the greatest, and act as a bridge between farmers and researchers.

Unfortunately, extension services have not had a strong track record in Nigeria. The main factors which have contributed to this include:

111 (Adene & Oguntade, 2008, p. 44)



- Inadequate knowledge of poultry production amongst extension agents, whose primary skillset is of crop management.
- Small-scale producers are numerous and scattered over large geographic areas. They are difficult enough to access under normal circumstances, and the problem is exacerbated due the lack of provision of transport facilities by the Government.
- Low ratio of extension agents to the number of farms. For example, Imo state has only 70 extension agents for 303, 333 farms for all types of crops and livestock. This results in an extension agent to farms ratio of 1:4,333. This is much lower than the national average of 1:1000. Regardless, extension agents are expected to reach all farms and administer training in crop production, livestock rearing, and forestry management.

Agricultural programming on radio and television however, are improving access to technical information for farmers.

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BUSINESS ENABLING ENVIRONMENT

The poultry sector has been a recipient of the Nigerian Government's support since the 1960s, when it first began providing subsidized vaccination programmes, training, and technical assistance.¹¹² The Government has continued to play a role in the poultry sector since then, and caused a rapid decline in the industry by banning the import of key poultry inputs including grains, medicine, and vaccines.¹¹³ Since then, the Government has been working on policies to strengthen the sector. Specific initiatives include:

- Banning the import of poultry meat, creating a large market space for local production
- Supporting development of high-yield breeds for Nigeria through the National Veterinary Research Institute.¹¹⁴

¹¹² (Anderson & Gugerty, 2010, p. 5)

¹¹³

Ibid.

¹¹⁴ Ibid.



- Controlling the import of grandparent and parent stock
- Monitoring hygiene and bio-safety of producers and hatchery operators
- Reduced duties on imported vaccines
- Subsidy on Newcastle vaccines for rural producers

The government also engages in other important functions, which includes approving poultry farm sites and conducting environmental impact assessments. Government extension agents monitor farms from a public health perspective, and have the authority to close down those which are not in compliance with bio-safety standards. The government also charges taxes and fees from various actors in the chain. All producers have to pay registration fees (depending upon the size of their operations). Retailers at LBMs have to pay local government fees, and distributors moving birds across states have to pay interstate and local government fees. The significance of the Government's role in the sector increased with the influenza outbreak. In response, the Government restricted the import of grandparent stock to just four companies in the southwest.¹¹⁵¹¹⁶ Additionally, a public-funded detect and eradicate policy

115 Obasanjo Farms, Avian Specialties, Chi Farms, and Amo Farms

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This does contribute to the scarcity of DOCs in the country

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was put in place to eliminate infected birds. The Government also organized awareness campaigns and workshops, restricted inter-state bird movement, and strengthened livestock disease control systems.¹¹⁷

The Government of Nigeria has maintained a ban on poultry imports since 2002. However, the ban is not enforced well and a significant amount of informal imports still flow into the country across porous borders. Frozen chicken meat that originates in European countries and/or Brazil, enters Nigeria through neighbouring Benin and is easily found in markets across the country. It creates stiff competition for local broiler produce. While the net effect has been positive, the ban needs to be better enforced.

Other government works which effect the overall enabling environment for poultry include physical infrastructure inside the Niger Delta. Road infrastructure is poor, and rail infrastructure in extremely bad condition. Bumpy roads contribute to higher transportation costs and the loss of DOCs along the journey from Ibadan into the Niger Delta. Farmers often have to pay a combination of fees to state and local governments along the way, which can include official and unofficial payments.

IMPACT OF THE AVIAN INFLUENZA OUTBREAK

Nigeria was the first country to report an outbreak of the H5N1, 'bird flu' virus in February 2006.¹¹⁸ The outbreak began in Kaduna and Kano in Northern Nigeria, and subsequently spread to states in the centre and south of the

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(Akinwumi, Okike, & Rich, 2010, p. 68)



country, eventually infecting 22 of Nigeria's 36 states.¹¹⁹ The outbreak destroyed approximately 1 million birds and caused poultry prices to deflate by 82 percent, as consumers became fearful of consuming poultry products.¹²⁰ However, by June 2006, the Government of Nigeria, with cooperation from the World Bank, USAID, DFID and the FAO, had begun to bring the outbreak under control. The Government launched an 'identify and eradicate' programme, and offered compensation to farmers for proactively slaughtering infected birds. A total of \$5.4 million in compensation money was paid out by the Government of Nigeria.¹²¹ The programme was seen to be corruption free, but elicited mixed reactions since the compensation initially offered for slaughtered birds was low. Other responses

119

(Anderson & Gugerty, 2010, p. 5)

120

Ibid

121

(Akinwumi, Okike, & Rich, 2010, p. VIII)

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focused upon increasing awareness of bio-security measures, meat handling and kitchen safety precautions, and disinfection of LBMs.¹²² The worst affected farms were those with poor bio-security measures, while large-integrated farms with controls in place were largely unharmed. Due to its proactive response, the Government succeeded in bringing the spread of the flu in control fairly rapidly. However, given the low incidence of bio-safety measures amongst rural poultry and small-size commercial producers, the country remains at-risk for contagious disease outbreaks in the future.

Government policies which impact the overall enabling environment for poultry include:

AGRICULTURAL POLICY, 2002

The policy sets the overall framework within which other specific support initiatives are taken. Broad objectives include diversifying the production base in the livestock sector, aligning feed production with livestock production, encouraging price stability, improving rural incomes and generating rural employment.

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(Akinwumi, Okike, & Rich, 2010, p. 2)

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POULTRY PRODUCTION POLICY

The policy encourages collaboration between Nigerian research institutions and developed world corporations with the objective of developing indigenous high-yield chicken breeds. Nigeria currently imports grand-parent stock, and local breeds would lead to import substitution and increased availability. To this end, public sector support is provided to the National Animal Production Research Institute (NAPRI). The Institute's main breakthrough has been the successful development of the Shika Brown Layer parent stock breed, which produces hens that can lay eggs for two years.¹²³ NAPRI is now believed to be concentrating on the development of a high-yield broiler bird variety.

Millennium Development Goal Project, Ministry of Agriculture. Lower interest rates of loans to poultry farmers through the Bank of Agriculture. State investment in the creation of new hatcheries and rehabilitation of defunct ones.

PRESIDENTIAL INITIATIVE ON LIVESTOCK, 2004-2006

This ambitious programme ran from 2004-06, and aimed to increase the production and consumption of poultry products, amongst other livestock. Planned interventions included increasing the availability of inputs and supporting services (vaccines, feed, meat processing, veterinary services, and DOCs). The programme also aimed to establish state-owned breeding farms and hatcheries. However, the overall initiative was deemed to be unsuccessful due to lack of adequate financing. For example, in 2004, out of a total expected allocation of NGN 2.3 billion, only NGN 100 million was allocated.¹²⁴

123 (The Poultry Site, 2011)



The Nigerian Government has also attempted to increase the availability of credit to the poultry industry. Historically, financial services have suffered from an inadequate understanding of agriculture, poor risk calculations, rigid assessment processes, and limited experience of lending to agriculture amongst loan officers.¹²⁵ Recently, the Federal Ministry of Agriculture has launched the Nigerian Incentive-Based Risk Sharing in Agricultural Lending (NIRSAL) scheme, which is an agreement between the Central Bank of Nigeria (CBN), the Banker's Committee, and the Federal Ministry of Agriculture and Rural Development. NIRSAL will share agricultural lending risks with commercial banks, and increase access to finance for agricultural value-chains.¹²⁶

124 (Adene & Oguntade, 2008, p. 55)

125 (Central Bank of Nigeria)

126

(Nnabugwu, 2012)



There is also a history of direct public interventions in agricultural market systems. The case of poultry in the Niger Delta is no different. While such initiatives are popular when the funding starts, they have usually distort market functions and do not produce good results. Imo State, which is known for state-run poultry enterprises, is a case in point. Several state-owned hatcheries in Imo are either in a state of disrepair or low-productivity. There is no evidence to show that such activity has stopped and the Federal Government (through the Ministry of Agriculture), continues to make commitments to make direct investments in poultry production. For example, the Ministry has recently announced plans to rehabilitate Avutu Poultry Farms in Imo State.¹²⁷ Abia State too is planning to launch an integrated poultry farm in Isiukwuato.¹²⁸ Further research is likely to discover more such initiatives in local governments and states across the Niger Delta.

Overall, public policies geared towards facilitating growth and investment in the poultry industry in the Niger Delta have had mixed results at best. Most policies, in any case, are formulated at the Federal Level, and do not seem to take into consideration regional factors which affect supply and demand. Additionally, it is hard to find evidence of successful initiatives which have made the overall environment for private investment easier. The lack of availability

127 (The Poultry Site, 2012)

128

(The Poultry Site, 2012)

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of electricity connections, poor transport infrastructure, inadequate extension services, lax implementation of the import ban, and weak access to finance, are all challenges which remain to be addressed.

DRIVING FORCES

The demand for poultry products, both meat and eggs, in Nigeria, and the Niger Delta, is steadily increasing, which bodes well for producers of all sizes. Below are the major forces driving this change:

Increase in per capita incomes. Though poultry products are still regarded to be luxury food items, rising per capita incomes are both increasing the number of poultry consumers, and increasing consumption of existing consumers.¹²⁹

Increase in population. Nigeria has a high population growth rate of 2.55%, which is fueling demand.¹³⁰

Increasing urbanization. The number people living in urban areas is growing, a trend witnessed in many countries. The current growth rate is 4%, and within the next five years, more than 50% of the population is

¹²⁹ GNI per Capita (PPP) has grown from \$1540 in 2005 to \$2,300 in 2011. See Annex B

¹³⁰ (CIA, 2012)



expected to be living in urban areas.¹³¹ This move impacts poultry production positively, since there is greater access to fresh and frozen poultry products in urban areas. Secondly, consumer attitudes are more favourably disposed towards eggs and chicken meat than rural areas.

Fast-food consumption is on the rise, with estimated growth rates at 40% per annum. Fast food culture is becoming increasingly popular, which is driving the demand for broiler meat. With a population of 33.6 million individuals and several reasonably-sized cities, the Niger Delta is sure to be part of this expansion. The demand from fast food outlets will increase the market-size for broilers, as well as drive quality improvement amongst broiler producers inside the Niger Delta.

Relative stability. Though conditions are far from ideal, the Niger Delta is reaping a peace dividend, and private investment is slowly increasing. If individual states can improve the business environment, they are likely to be able to attract investors to set up hatcheries, egg, and broiler production operations. Such changes would bring down prices of key inputs such as DOCs, and outputs including the price of meat and eggs. As we already know, a decrease in prices will lead to an increase in demand. Stable conditions also allow for inputs to come into the Niger Delta through neighboring states, allowing the poultry industry to continue functioning.

Price cushion. A history of instability has driven prices in the Niger Delta high. This is particularly true for inputs such as DOCs and supporting services such as transportation and utilities. Prices of goods and services are also inflated due to the presence of the oil and gas industry. The consistently high prices make poultry products

¹³¹ (Trading Economics)



expensive for consumers, and also facilitate the existence of a robust market for smuggled, frozen, imported poultry. Producers are now realizing that there may be an opportunity to locally produce and supply the market with poultry products, such as DOCs. Darrel's Farms, which has been able to take advantage of the situation by providing lower than market prices for broiler DOCs, is a case in point.

Seasonality of demand. Broiler production in the Niger Delta is strongly influenced by the spike in demand during the festive season. Delivery of broilers to market during December is of prime importance to producers, and that leads them to scramble for DOCs, 6-8 weeks earlier. Given that it can take another 8 weeks to obtain a delivery of broiler DOCs, farmers have to place orders in August, 4 months before the festive season hits. This seasonal variation also impacts the market for old layers and eggs. Egg producers look to time the culling of their old layers with the festive season, to fetch higher prices for meat. As a result of this however, there is often a shortage of eggs in markets in the Niger Delta, as the egg output drops. Ideally, the seasonality of demand should be driving upgrading of producers business models and the arrangements they have in place for sourcing inputs. It is difficult to see this happening without good horizontal cooperation amongst industry actors, however.

The Government's policy to continue the ban on imports of poultry continues to have a positive effect on the domestic industry. However, ongoing smuggling of poultry meat into the Niger Delta negatively impacts local production.

Increased knowledge amongst commercial farmers. Small and medium-sized farmers are better informed about feed production, and more of them are mixing their own feed. This should lead to increased efficiency in business models, and can have a direct effect on egg and meat prices.

MARKET OPPORTUNITIES

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HOUSEHOLD CONSUMERS

Increase sales by bringing down the retail price for chicken meat and eggs. According to the US Department of Agriculture's Economic Research Service, the 2005 own-price elasticity of demand for meat and dairy products in Nigeria was -0.574 and -0.594 respectively.¹³² Therefore a 10% decrease in price is expected to increase demand by about 5.74% for chicken meat and 5.94% for eggs, which is equivalent to an increase of 4,485 tonnes of meat and 1,990 tonnes of eggs in the Niger Delta. A second elasticity figure from Australian Centre for International Agricultural Research estimates own-price elasticity of demand for poultry in Nigeria to be -0.8.¹³³ Using this measure would result in an increase of 6,038 tonnes in demand for meat and 2,774 tonnes for eggs in the Niger Delta. Both figures point to the fact that an increase in the efficiency of production leading to reduction in prices will lead to an expansion of the poultry market for Niger Delta's producers. The case for lower prices leading to increased demand is further strengthened by the fact that at the present equilibrium price of chicken meat, many consumers buy cheaper frozen poultry priced at NGN 700/kg which is smuggled into the country.

¹³² (Muhammad, Seale, & Meade, 2011, p. 42)

¹³³

(Australian Centre for International Agricultural Research, p. 73)



The clear need for cheaper meat in the market raises the possibility of small-scale producers to begin producing low-cost broilers. These would likely find acceptability in both urban markets and in rural areas which are distant from the main urban centres, where poultry consumption is low.

In urban poultry production systems, the biggest deductions in cost of meat and eggs are likely to come from a reduction in the cost of feed, as it the largest cost input. However, this is not easily achievable since the price of feed depends upon the cost of raw materials. In the case of two essential raw materials, production is short of national demand, which leads to high prices. Additionally, the production of the two ingredients also takes place in northern Nigeria, which has been experiencing violence and instability. This instability often affects the transport of materials from north-south. Addressing the price of feed in a systemic manner would require finding ways to increase the production of its contributing raw materials. In the interim, work could also be done to improve trust amongst feed providers and commercial poultry farmers, and to develop strategies to protect farmers from large fluctuations in feed prices during times of instability. While the largest deductions could potentially come from feed, cost reductions could also come from sources. This includes the prices of DOCs, which are high in the Niger Delta, and reduced mortality from disease (estimated to be between 8-10% for commercial farms, and up to 50% in DOCs in the traditional system) through better veterinary care. Efficiencies can also be found through an improvement in access to agricultural credit, better market linkages and logistical planning, improved relationships with input providers, and enhanced access to technical information (particularly about feeding and farm hygiene practices) and extension services.

Respond to the shortage of eggs in December and January. The analysis revealed that there is actually a shortage of eggs in the Niger Delta immediately after Christmas and New Year's. It is likely that during this time, eggs are brought in from Lagos and/Ibadan to make up supply. Small and medium-sized egg producers could make

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up this shortfall, by coordinating the purchase of new layers with the culling of their old layers. Such a strategy would see them purchase layer DOCs approximately 20-24 weeks (5-6 months) before Christmas time, so culling the old flock does not entirely disrupt their production. Through this method, they would continue to be able to supply eggs during the shortfall period.

High DOC prices in the Niger Delta have created an opportunity for local production and marketing of chicks. Years of instability in the Niger Delta have discouraged investment and caused the flight of private capital. This has also driven up the prices of inputs which have to be imported into the region, and suppliers have benefited from continuously high prices and an absence of local competition. This has been, and continues to be the case in the supply of DOCs for layers and broilers. Since there are only a few hatcheries inside the region, the majority of DOCs are supplied from Southwestern Nigeria, in particular by large hatcheries located in Ibadan.

For example, the current farm-gate price of broiler DOCs at Obasanjo Farms in Ota, Ogun State, is NGN 110/chick. The distributor price in Asaba is NGN 250/chick, and the distributor price in Owerri is NGN 285/chick. By the time chicks reach Owerri, the addition of transport and distributor costs increase the price by 159%. The current situation shows that an artificial 'price cushion' exists in favour of large-scale producers of chicks from Ibadan. As long as there is no competition from inside the Niger Delta, it is unlikely that prices will come down. The large difference in prices indicates that there is an opportunity, in particular for Channel 3 medium-sized integrated producers with hatcheries, to look to supply the local market with DOCs. At least in one case, this has already begun to happen. Darrel's Farms started its own hatchery in May this year, and experimented with the sale of DOCs to distributors. Darrel's has been able to produce DOCs at a cost of NGN 150/chick, and offer an off-season farm-gate sales price of NGN 180/chick, at a margin of 20%. Given that Darrel's has a capacity to churn out 60,000 chicks per month, and requires only about 15,000 chicks for its own production, it could potentially earn an income of NGN 900,000/month

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from DOC sales alone. If other producers are able to recognize this opportunity and invest in their own hatcheries and ensure product quality, they can take advantage of this cushion and supply the Niger Delta at competitive rates, bringing down the average cost of DOCs – a move that will be welcomed by farmers.

FAST FOODS

As shown by the analysis, the fast food end market is expanding, and this will result in a proportionate increase in its requirement for chicken meat, creating an opportunity for broiler producers to sell more.

The market indicates that national and regional fast food outlets, particularly those from fast food outlets source their broiler requirement from a combination of large-branded producers and where circumstances are conducive, from local suppliers.¹³⁴ On average, they are able to buy processed, packaged broiler meat at between NGN 750-770/kg. The case of Winnie Bounty Farms (NGN 770/kg), Darrel's Farms (NGN 750/kg), and Mintel Farms (NGN 650-700/kg), provides evidence that at least in a limited number of cases, medium-sized integrated broiler producers are able to be price-competitive in the fast food market.¹³⁵ To be able to sell more, such producers need to increase output, improve their brand quality, prove their reliability in getting good to market, ensure product hygiene and quality standards are met, and develop increased linkages with fast foods (with a focus on understanding the need of their business models) within their geographic purview. With such improvements, broiler producers could be looking at a larger target market for meat.

¹³⁴ For example Chicken Republic, AJ's and Sizzlers in Warri are purchasing meat from ZARTECH. However, we also know that farms such as Winnie Bounty in Warri and Mintel Farms in Port Harcourt, sell a majority of their produce to fast food outlets within their geographic reach.



CATERING COMPANIES

Catering companies are looking to increase the local content in their business models. The results of interviews with 5 of the largest catering companies serving the oil and gas sector show that they are receptive to the idea of sourcing larger quantities of chicken meat from within the Niger Delta. At present, this market is served almost completely by Channel 4, which is able to provide quality, processed, packaged broiler meat, at competitive prices of around NGN 700/kg. However, catering companies understand that the oil and gas sector would like to see goods being sourced increasingly locally, and at least one company, JAD Oil and Logistics, has been able to increase its attractiveness by using a model which engages community contractors within the Niger Delta to buy their chicken meat supply.¹³⁶ The five catering companies which were spoken with during this analysis were all receptive to thinking of ways to source chicken meat from broiler producers within the Niger Delta. Their main concerns however, are whether such producers can provide the right quality and quantity that their clients require. The catering business depends upon smooth turnover, timely delivery, and reliable product quality. Companies cannot risk relying on a supplier who may be able to meet their requirement for meat one month, but fall short the next. The receptiveness of catering companies, and the increasing desire of the oil and gas sector to conduct operations in a manner that facilitates economic development within the Niger Delta, could help to create an opportunity for broiler producers with integrated operations to increase their participation in the chicken meat supply chain. To do this, they would have to increase current levels of production, uphold quality standards, and reliable supply.

¹³⁶ Though this model is a small improvement, it does not facilitate genuine local economic development.



SMALL-SIZED COMMERCIAL PRODUCERS

Given the opportunities in two important end-markets for chicken meat - catering companies and fast food outlets, the question arises whether small-sized producers can also engage in the supply of meat to these markets. As we know, small producers participate in the broiler market on a seasonal basis, and do not currently produce broilers in the quantity or of the quality required by more sophisticated markets such as fast foods, catering companies, and hotels. In fact, they are likely not to be well-informed about these markets. However, they could potentially engage with these markets through an intermediary who could perform two important functions - processing and cold storage. An outgrower's scheme would be just such a mechanism. During this analysis, at least one outgrower's scheme was identified with Darrel's Farms.¹³⁷ The question is whether such schemes have the potential for success in the Niger Delta, and if so, how can they be expanded? This merits further investigation, considering that such schemes could have multiple benefits:

- Increased income for small and medium-sized poultry producers, who would then be able to participate in the year-round market for broilers.
- Increase in the output of medium-sized integrated broiler producers, thereby making them more attractive to fast-food outlets and catering companies which prefer to procure large quantities of chicken meat at a time.
- It would increase local economic impact for oil and gas producers.

¹³⁷ With support from Darrel's, small-sized producers who were primarily in the egg market are now rearing broilers using DOCs from Darrel's, and selling them back to Darrel's for supply onto its institutional markets.



HOTELS

If successful in increasing their market share with catering companies, broiler producers inside the Niger Delta could look towards hotels as an additional end-market for their meat products. Though smaller than the demand for the first two categories, this would still constitute a year-round market for processed, packaged broiler meat.

CONSTRAINTS TO ACCESSING END MARKET OPPORTUNITIES

Lack of information about quality standards and quantity requirements at catering companies and fast food outlets. Outside of Channels 3 and 4, few farmers are aware about the specific requirements for broiler meat amongst catering companies and fast food outlets. Since both end markets are able to continue functioning comfortably under the current structure, there has been little incentive to explore the possibility of sourcing meat from local producers. In cases where there is contact between catering companies and Channel 3 producers, transactions are unable to materialize due to the mismatch between the quantities required by the companies and the capacity of the producers. Some producers also complain that the processing of registering to supply oil and gas catering companies is cumbersome and that local broiler producers cannot meet their requirements.

Conversely, actors from within these two end markets also claim that poultry farmers within the region are unable to deliver the right quality and quantity. Companies such as UNITOP and NC&SL, on occasion, have tried to purchase from local broiler producers. However, they were either not supplied the right quantity, or were supplied meat of poor quality (unfrozen, unclean). This has led to erosion of trust. The Niger Delta is a large region, and in part due to controversies surrounding the oil sector and its ancillary industries, it is hard to find business relationships being governed by trust. Producers of local broiler meat will also have to establish stronger brand identities to overcome this trust deficit and sell into the catering and fast food end markets.

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While the lack of information exchange between buyers and producers is a key constraint, there currently exists no forum to bring the aforementioned end markets and local producers of broiler meat together.

Absence of large-scale hatcheries in the Niger Delta region. Large-scale hatcheries are concentrated in the southwest, while the Niger Delta Region has a few small/medium scale hatcheries.¹³⁸ The hatchery business is capital intensive, and difficult to undertake if critical infrastructure like electricity isn't available. As a result, the Niger Delta does not produce enough DOCs to meet its requirement. The scarcity complicates production planning for farmers. Under the current structure of the value chain, the bulk of the Region's DOC requirement is met from hatcheries in Ibadan, and the majority of DOCs are brought into the region by distributors. However, farmers often do not trust what is being sold. In such cases, or when they are looking to get better prices, those who can afford it travel to Ibadan to place orders themselves, where they can have to wait 2-4 weeks to be supplied.

Another related problem is that DOCs are transported between the southwest and the Niger Delta under undesirable conditions, which leads to high rates of mortality. Regardless of how many birds survive, buyers have to pay transporters the full price.

¹³⁸ Some of the hatcheries in the Niger Delta are located in Imo. These are state-run and have a reputation of generating poor quality DOCs. Some commercial hatcheries were also identified in Owerri. However, they were found to be in poor shape due to lack of maintenance of equipment and unavailability of electricity. For a map of the major sources of DOCs in Nigeria, see Annex A.



The cost of feed. Feed accounts for almost 70% of the direct costs of poultry production. The two key ingredients for conventional feed are maize and soya meal (together they make approximately 75% of the mixture), and they are both in short supply and therefore expensive. Maize and Soya are grown in commercial quantities in Northern Nigeria, but the production is not enough to meet industrial and household demand. The resulting higher prices force many farmers to use low quality feed formulations, which then impacts output quality. Feed prices are also impacted by fluctuations in supply (particularly for maize) due to instability in the north. Poultry actors have to take the prices offered under such circumstances, and feed manufacturers normally transfer the costs to poultry farmers.

Lack of finance. The cost of borrowing to finance poultry operations is high, though it represents a wider systemic problem with access to agricultural finance in Nigeria. Poultry farmers claim that cost of borrowing is high, and that bankers are either unable or unwilling to understand how their businesses operate. There is also a high degree of dissatisfaction with lending policies, including collateral requirements and payback periods in particular. Short-term loans demand return payment within 3-6 months, a time period which is considered too short by most poultry farmers.

Capital investment cost of processing and cold storage facilities. Broiler production is more profitable when there is full vertical integration from DOC production to the output of processed, packaged meat. However, the cost of upgrading to this next level is prohibitive for most medium-size poultry producers in the Niger Delta.

Weak infrastructure. The lack of electricity access impedes the smooth functioning of hatchery operations, and adds to operating costs for farmers who have to run generators. For a more robust broiler production industry to develop in the Niger Delta, some investment in electricity supply will be required. However, it is beyond the investment individual actors can make and will require the involvement of state governments and the federal government.

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Weak enforcement of the ban on imported chicken. Imported chicken meat continues to flow into Nigeria, and unofficial payments to customs authorities are usually involved. Imported chicken is cheaper and readily available, and competes with locally produced broilers.

Limited availability of drugs and vaccines. Vaccines are produced locally by the National Veterinary Research Institute (NVRI) near Jos. However, there has been a production shortage for the past two years which has doubled prices. Small commercial farmers are not educated enough about vaccines, and the shortage of good veterinary doctors often means that producers resort to unqualified veterinarians for solutions. A comparison of current production budgets with data collected in previous years shows us the contribution of veterinary services and medicine to overall cost have increased, and are now at least 5% at an average farm.¹³⁹ However, this share varies depending upon the type of establishment and the management style of its proprietor.¹⁴⁰ The proper administration, or otherwise, can have a disproportionate impact on poultry production. On average, it is known that small and

¹³⁹ In comparison, data collected on small and medium commercial producers in Ogun State in 2004, calculated the share of veterinary services to be 1.28%. (Bamiro, Momoh, & Phillip, 2009)

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Dr. Adetuberu, Chairman of the Veterinary Doctors Association of Rivers State recommends that expenditure on veterinary services should account for 15-20% of total production cost.

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medium-sized commercial systems experience between 8-10% loss of birds due to disease, however, in the case of a serious disease attack, an entire farm can be put out of production.

Shortage of skilled staff. For medium to large sized farms, it can be difficult to find skilled labour willing to work on farms. On-farm jobs are deemed to be ‘demanding,’ and ‘low-paying,’ and less preferable to white collar jobs.¹⁴¹ The cost of labour inside the Niger Delta is also high in general due to the oil economy.

Weak horizontal and vertical relationships. PAN is fragmented and underperforming. It is non-representative (as shown by low membership numbers), and is fragmented and politicized. While the benefits to horizontal cooperation are clear, most poultry actors operate in isolation.

OPPORTUNITIES AND INCENTIVES FOR UPGRADING

PRODUCT

The purchase of chicken meat by catering companies represents a potential market opportunity for broiler producers inside the Niger Delta. The first step that producers would need to take to enter the market would be to improve the processing and packaging of the broiler meat they are currently producing. This would include the ability to supply frozen, rather than fresh chicken. The final product would need to be cleaned, cut, frozen, packaged, and labeled. We have already identified at least 4 such medium-scale broiler manufacturers inside the Niger Delta – Darrel’s Farms, Winnie Bounty Farms, Mintel Farms, and Urban Farms. A possible market development project could identify

141 (Youth Initiative for Sustainable Agriculture Nigeria)



additional producers of a similar profile within the Niger Delta, facilitate linkages with catering companies, and explore ways for the producers to upgrade to a level where the catering industry would be comfortable purchasing from them.

Large-scale hatcheries are not commonly found inside the Niger Delta. Channel 3 producers are investing in their own hatcheries, but their primary purpose is to supply broiler chicks for their own production. Meanwhile, small and medium sized poultry producers are eager to purchase quality DOCs at prices lower than those offered by distributors selling chicks from Ibadan. To take advantage of this opportunity, poultry producers with hatcheries will have to separately evaluate and organize their business for DOC production. This would entail accurate costing, becoming knowledgeable about market timing and quality requirements, and increasing direct engagement with small and medium-sized commercial farmers. The existing high prices and potential success of a few lead firms could encourage other actors with enough capital to invest in DOC production.

OPERATIONS

If Channel 3 broiler producers are to avail the opportunity offered by the catering services and fast food end markets, they will have to make improvements to their operations to ensure that hygiene standards and bio-safety measures are strictly followed, and that consistent product quality is ensured. Second, they will have to upgrade their production capacity to a point where catering companies will be comfortable placing orders of reasonable size with them. This would mean 15-20 tonnes a month. One way to increase production would be through the set-up of outgrower schemes. Under such schemes, Channel 3 producers could provide DOCs, feed, and technical advice to smaller poultry farmers interested in rearing broilers. With the right guidance, such farmers could boost meat quantity for Channel 3 producers, without requiring extra investment of fixed capital.

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While the opportunity in meat production lies with growth into new markets for Niger Delta producers, the opportunity in eggs lies with increasing the efficiency of production. According to the price elasticity conditions discussed earlier, producers should be incentivized to reduce their cost of production, and therefore, wholesale price. Often, small and medium-sized farmers cite the high cost of feed or limited access to finance to indicate that prices are out of their control and that they have no way to influence them. However, it is also known that finance and feed are not the only constraints affecting production. There are also other issues which affect production, such as chick mortality during transportation, the limited bargaining power of producers, incidence of disease and lack of adequate veterinary services. Through increased horizontal cooperation, small and medium-sized farmers should look to increase their productivity and take advantage of rising demand for poultry products. A second effect of improved business operations should also be better alignment with the fluctuations caused due to seasonal demand.

BRAND

While the above improvements will be sufficient for meeting eligibility criteria set by catering companies and fast food outlets, they will not necessarily lead to new orders without an equivalent improvement in brand equity (for Channel 3 producers). Broiler producers based in Southwest currently enjoy high brand equity which translates into end-market confidence. For local broiler producers to increase sales to catering companies, fast food outlets, or other institutional buyers, they will have to brand their meat, and then position their brand as being quality-conscious, reliable, and overall good value-for-money.

The same rules apply to DOCs, though the buyers here are small-medium sized producers. Local hatcheries have developed a poor reputation over the years, so producers will have to begin by restoring buyer confidence in local DOCs.

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STRATEGY

VISION FOR THE NIGER DELTA POULTRY SECTOR

The current status of the poultry sector inside the Niger Delta presents concrete opportunities for increased economic benefits for local producers of meat and eggs, and an opportunity for the oil and gas industry to increase local content through catering companies.

A future vision would see local producers of poultry upgrade meat quality and capacity to increase supply to sophisticated end markets (catering companies, fast food, and hotels), and increase the efficiency of egg production. In the case of the former, this would require Channel 3 producers to make investments to ensure that they can supply quality broiler meat which is packaged and processed, on a consistent basis. This would result in increased access to a market worth an estimated \$80 million inside the Niger Delta. Channel 3 producers would also need to increase their production capacity, which could be done through capital investments into farms, as well as through the development of equitable out-grower schemes. The resulting future state would bring additional income to producers in Channels 1, 2, and 3, and would enable catering companies to increase local content in their operations. It would also provide an effective way for oil and gas companies to increase the inclusiveness of their supply chains and enhance the economic impact of their operations inside the Niger Delta.

A future vision for egg producers would include increasingly efficient operations, and greater cooperation amongst egg producers to address structural constraints which keep them from reducing prices and increasing sales. This would include addressing the concerns around availability of DOCs, overcoming bird loss during transportation, increased awareness amongst small-sized producers about the usage of veterinary services and vaccinations, and

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addressing the shortage of eggs following the festive seasons. From the analysis, we know that the market will respond positively to increased supply of eggs at cheaper rates.

Finally, a future vision of the poultry industry inside the Niger Delta would also see Channels 1 and 2 decrease their dependency upon the supply of DOCs from the southwest. This change could be catalyzed by Channel 3 producers, who could scale-up their sales of DOCs, providing easier access and lower prices for Channel 1 and 2 producers inside the Niger Delta.

Combined, a potential vision for the future of the Niger Delta poultry industry within five years could be:

“to have the capability to supply quality, processed, packaged broiler meat on a consistent basis to institutional end-markets, particularly catering companies and fast food outlets, lower the market price of eggs by 10%, and develop a commercial alternative to the regions dependency upon southwestern Nigeria for DOC supplies.”

VALUE CHAIN COMPETITIVENESS STRATEGY

The following elements will be required to come together to enhance competitiveness of the poultry value chain inside the Niger Delta, and ultimately enable it to take advantage of end-market opportunities which are on the horizon.

INVESTMENT

Increased investment, preferably by the private sector, into setting up Channel 3 integrated-production operations which can create a local supply option for catering companies, fast food outlets, and other institutional buyers, as well as increase the local production of quality DOCs.

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INPUT SUPPLIES

An improvement in the availability and price of DOCs for the market, initially through more organized purchasing agreements between hatcheries in southwestern Nigeria and producers inside the Niger Delta, and eventually through increased private investment in hatcheries within the region.

PRODUCTIVITY

Gains in overall farm productivity, to be achieved through improved use of feed (ideally, a reduction in the cost of feed), disease prevention, higher yield breeds, business management, and improved collective coordination through representative, well-functioning business associations.

BUSINESS ENABLING ENVIRONMENT

Stronger enforcement of import control, increase in indigenous production of vaccines, and significantly, and improvement in the access to finance for competitive poultry producers.

UPGRADING TRAJECTORY

Given that a collective will to upgrade meat and egg production in an organized manner is present, the following logical steps could be taken to bring about the competitiveness improvements in the value-chain, which have been discussed throughout this report.

CHICKEN MEAT

STAGE 1: IDENTIFICATION, ASSESSMENT, DESIGN.

The clearest opportunity within the broiler production is for Channel 3 producers to supply the catering company and fast food end markets with quality frozen meat in greater quantities. Stage 1 of upgradation would require the

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identification of a critical mass of such producers within the Niger Delta, particularly those proximate to the oil centres of Warri and Port Harcourt. Identification would include mapping product range, quality, and output capacity, in addition to identifying their current clientele. Simultaneously, a detailed analysis of the requirements of leading corporations within the oil and gas industry would be required, along with documentation of their ability to maneuver contracts to encourage local economic development (which is likely to vary between companies). Once product quality and quantity requirements have been established, a deeper assessment of Channel 3 producers would be required. This would include evaluation of their product and brand competitiveness with a focus on establishing improvement priorities. At this stage, given a deeper understanding of end markets and their requirements, investment strategies targeted at operational improvements would need to be designed.

STAGE 2: INVESTMENT

Stage two would see the execution of investment strategies already developed, and bring about improvements in quality, bio-safety control, processing, packaging, and output. Given the current indications of a mismatch in average output of Channel 3 medium-sized broiler producers and the quantities demanded by catering companies, it is expected that expansion of output will be the most challenging investment. Such investments could either be cost intensive – such as the additional of hen houses and accompanying equipment – or could involve a change in operational style – such as the creation of equitable, efficient out-grower schemes. Individual producers would need to decide for themselves which change would be best suited for them.

The steps would lead to an increase in the sales of broilers by Channel 3 producers into the catering company and fast food end markets.

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CHICKEN EGGS

Growth in egg production is dependent upon operations upgrading, which could come through the following stages, each of which would involve a series of specific steps.

STAGE 1: ORGANIZATION AND PRIORITY SETTING

It is common to find industry associations championing their members' concerns, and calling for improvements in the enabling environment. However, due to the challenges in that discourse, opportunities for internal focus upon business models and problems which can be addressed by industry actors themselves are often missed.

The first stage of improvement in the efficiency of the egg value chain should focus upon identifying such improvements, and assessing whether they can be brought about through collective action by industry actors themselves. For example, this could include collective purchasing and transport of DOCs from Ibadan. Such a step would be particularly helpful for small-scale producers, who often have to run between distributors and hatcheries trying to purchase their supply. At the distributor end, they are met with high prices, and can occasionally be swindled by dishonest distributors, and at the hatcheries end, they often find themselves the last priority on a long list which contains larger buyers. Actions could also be taken to arrange more reliable transportation between Ibadan and collection points inside the Niger Delta, with a focus on reducing mortality of chicks due to movement, and easier access to chicks for small-producers in one marketplace.

STAGE 2: COLLECTIVE BARGAINING

Increased collective cooperation and credibility of the Poultry Association of Nigeria could then lead to addressing larger enabling environment problems, the most important of which include improved access to finance, and better infrastructure for poultry businesses. Both will be challenging. As identified in the Poultry Sector Stakeholder Workshop in Warri, improved access to finance hinges not only upon changes in lending policies at financial

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institutions, but also better record keeping and business feasibility development by poultry producers. Eventually, even if those two elements are aligned, the government's cooperation will still be required to bring down lending rates to reasonable levels.

While Stage 1 improvements can be driven and brought about by industry actors themselves, Stage 2 upgrading will require organized action by a representative, respected business association, and constructive policy dialogue with the federal government, and assorted state governments within the Niger Delta.

LOGICAL SEQUENCE OF BENEFITS

Given what we know about the poultry sector, its constraints, opportunities for growth, and linkages with the catering industry, the final question to ask is how, conceptually, could an investment in the poultry sector be mutually beneficial for the oil and gas sector, and for the Niger Delta economy? To illustrate the logical sequence of benefits, the broiler value chain has been used as an example.

CURRENT SITUATION

Under the status-quo, we estimate that the majority of an estimated \$35 million in expenditure on chicken meat supplies for the oil and gas industry flows out of the Niger Delta.¹⁴²

¹⁴² Estimated collective expenditure for top 5 oil and gas producers.



TIER 1 DIRECT BENEFITS

If 30% of the above expenditure could be channeled toward broiler meat producers within the Niger Delta, it would lead to an injection of \$10.5 million into the region's economy. The first effect would be a marked increase in the local content of the supply chain of leading oil and gas corporations. Those corporations which take the initiative will increase the efficacy of their local content programming.

Second, the injection would lead to an immediate increase in the market opportunity available to local broiler producers, the actors they are connected with in the value chain and those that provide supporting services to them. Once supply begins, additional income will flow to medium-sized broiler producers, small commercial broiler producers (through outgrower linkages), farm workers, DOC distributors, and hatcheries. The following actors from supporting market systems will also benefit from increased sales, income, and employment; feed manufacturers, veterinarians, vaccine retailers and manufacturers, equipment providers, and transporters. Local economic development would be a direct benefit of the reorientation of the supply chain.

TIER 2 INDIRECT BENEFITS

First, upgradation in the Niger Delta broiler value chain would act as a catalyst for it to expand not only into the catering company end market, but also into the end market with fast food outlets. As we know, the meat requirements for fast foods are similar to those of catering companies. As broiler producers become more established, they will not only be dependent upon catering companies for their sales, but will also be able to offer a competitive supply option to the demand from fast foods.

The second indirect benefit results from the realization that jobs and income are not ends in themselves, they are means. Increased income and jobs for the workers in the value chain will result in a direct increase in their household expenditure on social goods such as education, healthcare, and sanitation. Therefore, the benefits should

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not stop at the sole proprietor of a medium-sized commercial broiler business, but should also mean that his or her workers are able to set more aside for their children's medical expenses. Improved human development is a key aspect of local economic development.

TIER 3 INDIRECT BENEFIT

Pockets of prosperity and employment opportunities are a vanguard against instability. An improvement in local economic and social conditions will result in a third benefit, which is contribution to stability. This is a key part of the mission of PIND Foundation in the Niger Delta, and in the long-term, essential to the region's prosperity.

Channeling expenditure towards producers in the Niger Delta would, of course, incur a cost. For Niger Delta producers to supply broiler meat, the constraints they face would have to be overcome. The cost of facilitating that change would need to be evaluated against the benefits which will accrue at Tiers 1, 2, and 3.

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ANNEX A: MAPS AND GEOGRAPHIC REPRESENTATION OF POULTRY



Figure 10: Map of Nigeria. Source: University of Texas at Austin.



Figure 11: The Niger Delta States. PIND Foundation.
Figure 12: Oil Facilities in the Niger Delta, 2010. Source: Furman University.

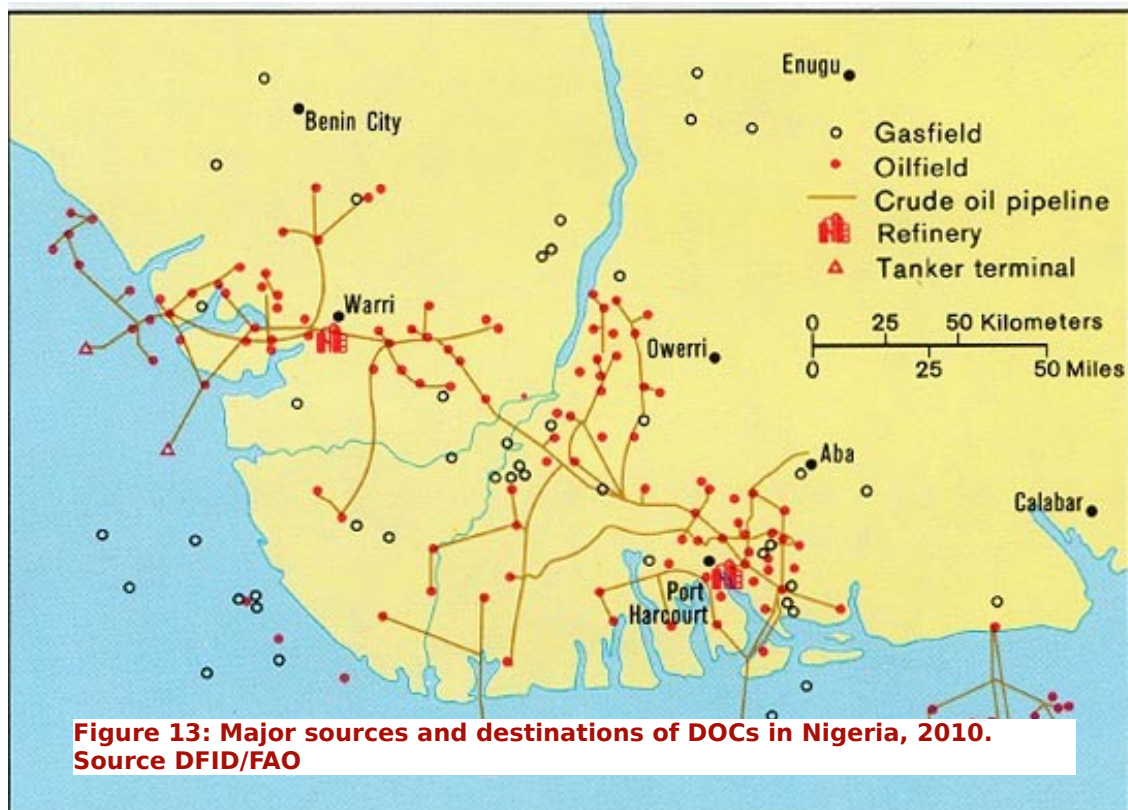


Figure 13: Major sources and destinations of DOCs in Nigeria, 2010.
Source DFID/FAO



Figure 14: Spatial distribution of poultry farms in Nigeria. Source: Prepared by IITA for USAID.



ANNEX B: KEY INDICATORS

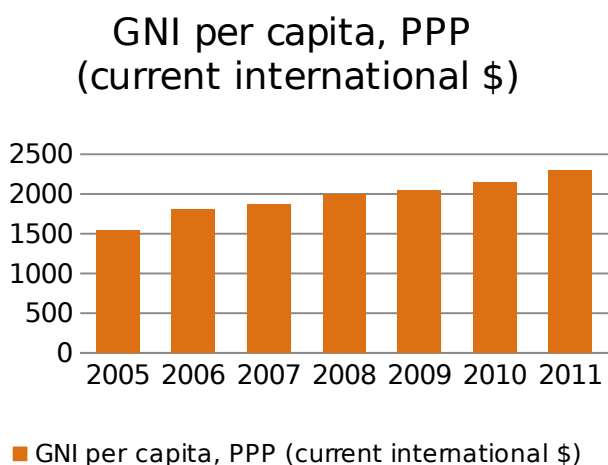
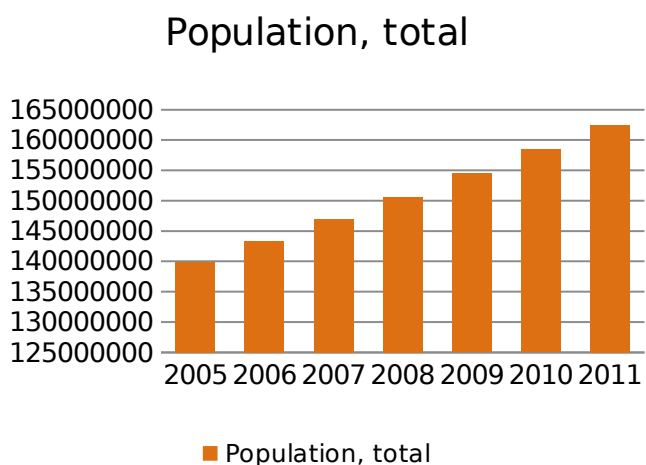


Figure 16: Population of Nigeria. Source: World Bank.

Figure 15: GNI Per Capita (PPP), Nigeria. Source: World Bank.



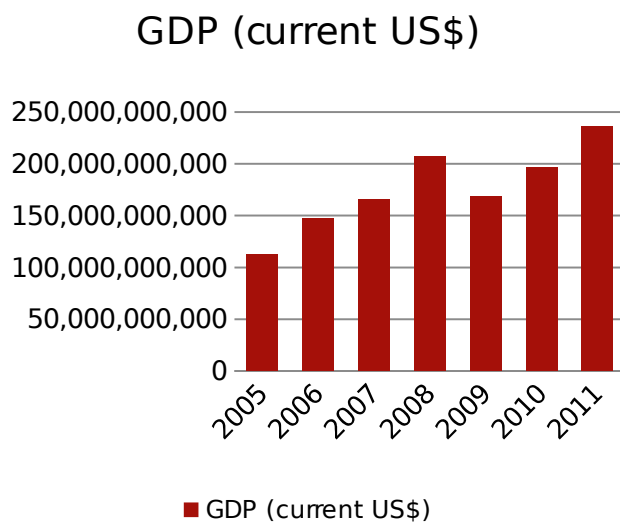
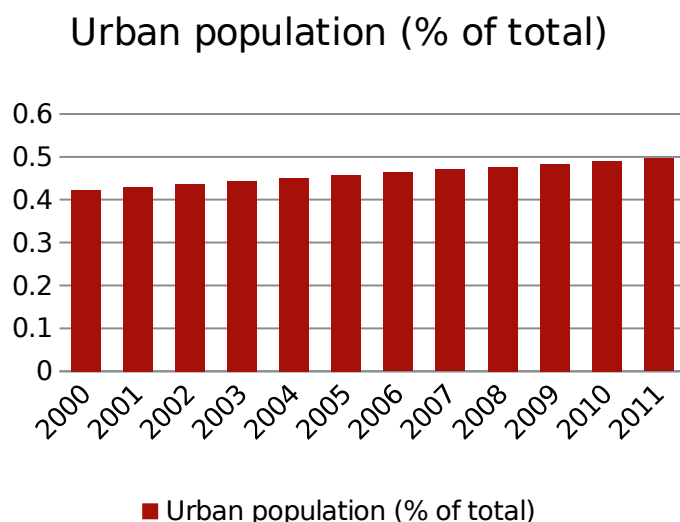


Figure 17: GDP (Current US \$), Nigeria. Source: World Bank.



ANNEX C: COMPLETE LIST OF CATERING COMPANIES

Table 5: List of catering companies in Warri and Port Harcourt. Source: Businesslist.com.ng

Number	Name	Location
1	Alifun Catering	Warri and Port Harcourt
2	Allied Trust & Systems	Warri
3	Evata Catering	Warri
4	Flair Fingers Cake World	Warri
5	Geomosa Catering Co. Ltd.	Warri
6	J&M Global Services	Warri
7	Landmark Catering	Warri
8	Marvelous Rental and Catering Services	Warri
9	Nigeria Catering and Supermarkets Limited (NC&SL)	Warri
10	Nigerian Caterers Ltd.	Warri
11	RACON	Warri
12	UNITOP Catering	Warri
13	JAD Oil and Logistics	Warri
14	Courdeau Catering Nigeria Ltd	Port Harcourt
15	WHassan Eurest Nigeria Ltd. (Formerly ESS Support Services Worldwide)	Port Harcourt
16	Geo-reysting Group	Port Harcourt
17	Genesis Food Nigeria Limited	Port Harcourt
18	Gins Global Services Ltd.	Port Harcourt
19	Industrial Catering Services Ltd.	Port Harcourt
20	Landmark Foods Nigeria Ltd.	Port Harcourt
21	Pellegrini Nigeria Catering Ltd.	Port Harcourt
22	Sodexo Remote Sites Nigeria Ltd. (Reported to have left Nigeria)	Port Harcourt
23	Sundry Food Services	Port Harcourt
24	West Africa Catering	Port Harcourt

ANNEX D: SAMPLE PRICE LIST FROM A LARGE-INTEGRATED BROILER PRODUCER

The prices are as of February, 2012, and are wholesale prices offered to the catering industry in Warri.

Table 6: Sample produce price list for a large integrated broiler producer. Source: CHI Farms.

No.	Product	Price (NGN per Kg)
1	Dressed chicken	700
2	Smoked chicken	950
3	Gizzard	770
4	Grade 1/11	700
5	Spent layers	640
6	Chicken breast	1,120
7	Chicken wings	775
8	Whole legs/thigh	775
9	Chicken ¼ cuts	735
10	Chicken 1/6 cuts	745
11	Boneless chicken	1,400

ANNEX E: END MARKET DEMAND ESTIMATES

CATERING COMPANIES

Table 7: Catering company chicken meat market estimation. Source: Team Analysis.

MEAT								
Company	Source	Price (NGN/kg)	Vol. (T/m)	Value (NGN/m)	Value (\$/m)	Annual Vol. (T/Yr)	Annual Value (NGN)	Annual Value (\$)
Co. 1	ZARTECH	720	27	19.4m	121500	324	233m	1.5m
Co. 2	ZARTECH, Obasanjo, Chi	700	30	21m	131250	360	252m	1.6m
Co. 3	ZARTECH (Via community contractors)	870	66	57.5m	358875	792	689m	4.3m
Sub-Total		763	123	93.9m	586813	1476	1,126.7m	7m
Co. 4	CHI Farms	700	4	2.8m	17500	48	33.6m	210000
Co. 5	ZARTECH/local community	675	15	10.1m	63281	180	121.5m	759375
Total (O&G Catering Cos.)			615	469m	2.9m	7380	5,633m	35.2m

Table 8: Catering company egg market estimation. Source: Team Analysis.

EGGS									
Company	Source	Price (NGN/crate)	Volume (Crate/m)	Value (NGN/m)	Value (\$/m)	Annual Volume (Crate/Yr)	Annual Volume (Tonnes/Yr)	Annual Value (NGN / Yr)	Annual Value (\$/Yr)
Co. 1	Local Suppliers	800	3,750	3m	18,750	45,000	67.5	36m	225,000
Co. 2	ZARTECH	730	3,000	2.1m	13,688	36,000	54	26.3m	164,250
Co. 3	Local community	920	10,000	9.2m	57,500	120,000	180	110.4m	690,000

	supplier s								
Sub-Total		817	16,750	13.6m	85,495	201,000	301.5	164m	1m
Co. 4	Obasanjo Farms	900	200	180,000	1,125	2,400	3.6	2.2m	13,500
Co. 5	Local suppliers, ZARTECH in case of shortage	880	1,000	880,000	5,500	12,000	18	10.6m	66,000
Total (O & G Catering Cos.)			83,750	68.4m	427,474	1m	1,508	821m	5.1m

FAST FOOD OUTLETS

Table 9: Fast food chicken meat market estimation. Source: Team Analysis.

MEAT DEMAND						
Outlet Size	Outlets/s	Monthly Demand (Tonnes)	ND Outlets	Annual Demand (Tonnes)	Annual Value-Meat (NGN)	Annual Value-Meat (\$)
Large	5	5	45	2700	2,025,000,000	12,656,250
Medium	10	3	90	3240	2,430,000,000	15,187,500
Small	15	2	135	3240	2,430,000,000	15,187,500
ND Total			270	9180	6,885,000,000	43,031,250

Table 10: Fast food egg market estimation. Source: Team Analysis.

EGG DEMAND

Outlet Size	Outlets/s tate	Mont hly Dema nd (Crat es)	ND Outl ets	Annu al Dema nd (Crat es)	Annual Value-Eggs (NGN)	Annual Value- Eggs (\$)
Large	5	30	45	16200	11,340 ,000	70 ,875
Medium	10	20	90	21600	15,120 ,000	94 ,500
Small	15	10	135	16200	11,340 ,000	70 ,875
ND Total			270	5400 0	37,80 0,000	23 6,250

HOUSEHOLD CONSUMERS

Table 11: Estimate of Niger Delta poultry production, and LBM demand. Source: Team Analysis.

Estimated Supply and LBM Demand of Commercial Meat and Eggs in the Niger Delta, 2010					
	Supply (Kg)			Demand (Kg)	Net
Indicator	Nigeria	Niger Delta	Indicator	Niger Delta	
Population Estimate (2010)	158,423,182	33,616,000	Population Estimate (2010)	33,616,000	
Total Meat Production (Kg)	268,000,000	56,867,233	Total Meat Consumption (Kg)	57,147,200	
Total Egg Production (Kg)	623,400,000	132,279,974	Total Egg Consumption (Kg)	124,379,200	
Meat Production Ratio (Kg/Capita)	1.69	1.69	Meat Consumption Ratio (Kg/Capita)	1.7	
Egg Production Ratio (Kg/Capita)	3.94	3.94	Egg Consumption Ratio (Kg/Capita)	3.7	
Commercial Meat Production (40%)	107,200,000	22,746,893	Commercial Meat Consumption (45%)	25,716,240	(2,969,347)
Commercial Egg Production (40%)	249,360,000	52,911,990	Commercial Egg Consumption (45%)	55,970,640	(3,058,650.4)

HOTELS

Table 12: Hotel meat and eggs market estimation. Source: Team Analysis.

INDUSTRY SIZE		MEAT				EGGS			
Hotels/State	ND Hotels	Avg. Monthly Meat Demand/Hotel (Kg)	Annual Meat Demand (Tonnes)	Value-Meat (NGN)	Value-Meat (\$)	Avg. Monthly Egg Demand/Hotel (Crates)	Annual Egg Demand (Crates)	Value-Eggs (NGN)	Value-Meat (\$)
10	90	330	356400	285120000	1782000	80	86400	60480000	378000

ANNEX F: FAO FEATURES OF POULTRY PRODUCTION SYSTEMS

Table 13: FAO classification of poultry production systems. Source: FAO Poultry Sector Country Review, 2008

Country Review: 2005

Sectors (FAO/definition)	Poultry production systems			
	Industrial and integrated	Commercial		Village or backyard
		Bio-security		
		High	Low	
	Sector 1	Sector 2	Sector 3	Sector 4
Biosecurity	High	Mod-High	Low	Low
Market outputs	Export and urban	Urban/rural	Live urban/rural	Rural/urban
Dependence on market for inputs	High	High	High	Low
Dependence on goods roads	High	High	High	Low
Location	Near capital and major cities	Near capital and major cities	Smaller towns and rural areas	Everywhere. Dominates in remote areas
Birds kept	Indoors	Indoors	Indoors/Part-time 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 Veterinarian	Pays for veterinary service	Pays 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 extension service
Source of finance	Banks and own	Banks and own	Banks and private ²	Private and banks
Breed of poultry	Commercial	Commercial	Commercial	Native
Food security of owner	High	Ok	Ok	From ok to bad

Sector 1: Industrial integrated system with high level of biosecurity and birds/products marketed commercially (e.g. farms that are part of an integrated broiler production enterprise with clearly defined and implemented standard operating procedures for biosecurity).

Sector 2: Commercial poultry production system with moderate to high biosecurity and birds/products usually marketed commercially (e.g. farms with birds kept indoors continuously; strictly preventing contact with other poultry or wildlife).

Sector 3: Commercial poultry production system with low to minimal biosecurity and birds/products entering live bird markets (e.g. a caged layer farm with birds in open sheds; a farm with poultry spending time outside the shed; a farm producing chickens and waterfowl).

Sector 4: Village or backyard production with minimal biosecurity and birds/products consumed locally.

Table 14: Production characteristics. Source: FAO Poultry Sector Country Review, 2008

Major features	Sector 1	Sector 2	Sector 3	Sector 4
Integration Scale	High & Full	Medium	Minimal/Nil	Nil
▪ Grand Parent Stock	✓	x	x	x
▪ Parent Stock	✓	x	x	x
▪ Hatcher	✓	x	x	x
▪ Intensive system	✓	✓	✓	x
▪ Mixed species	x	x	x	✓
Inputs Scale				
▪ Own feed mill	✓	✓	x	x
▪ Own electricity	✓	✓/x	x	x
▪ Own water system	✓	✓/x	x	x
▪ Own vet, vacc and drugs	✓	✓/x	x	x
Bio-security Scale				
▪ Perimeter fence-guard	✓	✓	✓	x
▪ Specified housing	✓	✓	✓/x	x
▪ Movement restriction	✓	✓	✓/x	x
▪ Staff hygiene, showering	✓/x	✓/x	x	x
▪ Facility; equip hygiene	✓	✓	✓	x
▪ All-in all-out site	✓/x	✓/x	✓/x	x
Products				
▪ Parent stock DOC	✓	x	x	x
▪ Comm DOC	✓	x	x	x
▪ Table eggs per farm	✓/x	✓✓	✓✓	✓
▪ Meat or broiler	✓/x	✓✓	✓	✓
Further Processing	✓/x	✓/x	x	x
Economic roles				
▪ Labour generating scale	✓✓✓	✓✓	✓	x
▪ Import & Export	✓✓	✓	x	x
▪ Rural / Culture Impact	✓	✓	✓/x	✓✓

ANNEX G: VETERINARY FACILITIES IN STATES ACROSS NIGERIA

Table 15: Density of veterinary facilities in Nigeria. Source: Avian Influenza Control and Human Pandemic Preparedness and Response Project.

	Veterinary Facilities per States		Vet Facilities Reporting Animal Health Data		Vet Facilities reporting Animal Health Data (%)	
	Clinics	Farms	Clinics	Farms	Clinics (%)	Farms (%)
Abia	11	250	11	50	100	20
Adamawa	24	220	21	0	87.5	0
Akwa Ibom	31	500	31	0	100	0
Anambra	10	82	10	0	100	0
Bauchi	23	*	20	10	86.96	
Benue	2	0	0	0	0	
Borno	20	*	20	0	100	
Bayelsa	1	17	0	0	0	0
C.River	10	348	10	0	100	0
Delta	35	162	4	0	11.43	0
Ebonyi	3	36	1	1	33.33	2.78
Edo	5	65	5	0	100	0
Ekiti	19	117	19	*	100	0
Enugu	17	67	17	3	100	4.48
FCT	8	120	8	80	100	66.67
Gombe	13	172	11	3	84.62	1.74
Imo	27	454	27	454	100	100
Jigawa	8	*	8	4	100	
Kano	142	500	132	9	92.96	1.8
Kaduna	13	215	23	0	176.92	0
Kebbi	24	185	24	0	100	0
Kogi	21	*	21	0	100	
Katsina	7	1	19	0	271.43	0
Kwara	80	*	18	80	22.5	
Lagos	6	600	6		100	0
Nassarawa	5	65	5	0	100	0
Niger	19	147	19	1	100	0.68
Ogun	6	1	*	*	0	0
Ondo	15	*	15	*	100	0
Osun	31	200	*	*	0	0
Oyo	28	*	*	*	0	
Plateau	65	*	17	*	26.15	
Rivers	6	104	6	*	100	0
Sokoto	25	1	25	4	100	400
Taraba	4	162	4	0	100	0
Zamfara	1	25	1	0	100	0

