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Livestock production systems spotlight

NIGERIA

Dairy cattle and
poultry (chicken) sectors



Federal Republic
of Nigeria



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Livestock Production Systems Spotlight

Dairy Cattle and Poultry (Chicken) sectors in Nigeria

1. Introduction

Policies and investments in the livestock sector are effective when they take the multiple dimensions of livestock farming into account. These dimensions include the monetary and non-monetary benefits for producers and other actors along the value chain, such as income, food, draft power and insurance. They also include public health and environmental aspects, such as the availability of protein for good nutrition and health, the use of dung to fertilize soil, as well as the negative impacts of zoonotic diseases on public health and the consequences of overgrazing for the environment.

To design and formulate effective livestock policies and investments, a multi-stakeholder multi-disciplinary approach that considers and manages the trade-offs inherent in the multiple dimensions of the sector is necessary. When stakeholders, looking at the livestock sector from different perspectives, share a common understanding of the livestock production systems – agreeing on common descriptions of the production systems and sub-systems – they can draw constructive conclusions regarding the pros and cons of alternative policy actions and investments.

This brief presents a snapshot of the cattle dairy and poultry production systems in Nigeria as jointly characterized by the Federal Ministry of Agriculture and Rural Development (FMARD), the Federal Ministry of Environment (FMoE) and the Federal Ministry of Health (FMoH). It is the first time these stakeholders have embarked in a multi-disciplinary process to jointly define cattle and poultry production systems. The process involved a three-step approach:

- A narrative description of the cattle dairy and poultry production systems and sub-systems.
- Validation and improvement of cattle and poultry distribution maps, as generated through the FAO Gridded Livestock of the World 3.0 (GLW 3.0), and identification of the share of animals raised in the different sub-production systems (e.g. 30 percent in intensive systems and 70 percent in extensive systems).
- The analysis of datasets, policy documents, published and unpublished literature on cattle and poultry production systems to generate statistics for key variables and parameters, including geographic variables.

This approach has three strengths:

- It is stakeholder driven, as stakeholders define the different livestock production systems.
- It allows “adding-up” the available, often scattered, information by using geographical location as a common denominator.
- Its outputs can be visualized by combining maps and bar charts.

2. Why cattle and poultry¹ production systems?

As a part of the implementation of Africa Sustainable Livestock 2050, the Ministries responsible for livestock, health and environment have engaged stakeholders to assess the current and long-term impact of livestock production systems on the economy and people’s livelihoods, on public health and on the environment. To start with, they have agreed to focus on two livestock production systems.

¹ Due to data availability, the assessment has been carried out on chicken, that comprise the vast majority (~90%) of the country’s poultry population. Therefore, the term “poultry” in this brief refers to chicken.

Dairy cattle and poultry were selected because of their relevance for the national economy and people’s livelihoods, and their anticipated growth in the coming decades.

3. Poultry (chicken) production systems in Nigeria: a snapshot

Livestock production accounts for about 6-8 percent to the Gross Domestic Product (GDP) and 20-25 percent to the value added of agriculture, and it contributes about 36.5 percent to the aggregate protein intake of Nigerians (FMARD, 2017). Poultry is one of the main agricultural industries in the country and the most commercialized of the agricultural sectors, with a net worth of USD 1.7 billion per year (FRN, 2007). The industry comprises about 180 million birds (GLW 3.0, 2017) – the second largest chicken population in Africa after South Africa – producing 650 000 tonnes of eggs and 300 000 tonnes of meat in 2013. Nigeria’s egg production is the largest in Africa (FAOSTAT, 2017 and SAHEL, 2015). Furthermore, poultry meat and eggs are the most consumed animal protein; unrestricted by any religion or culture in Nigeria.

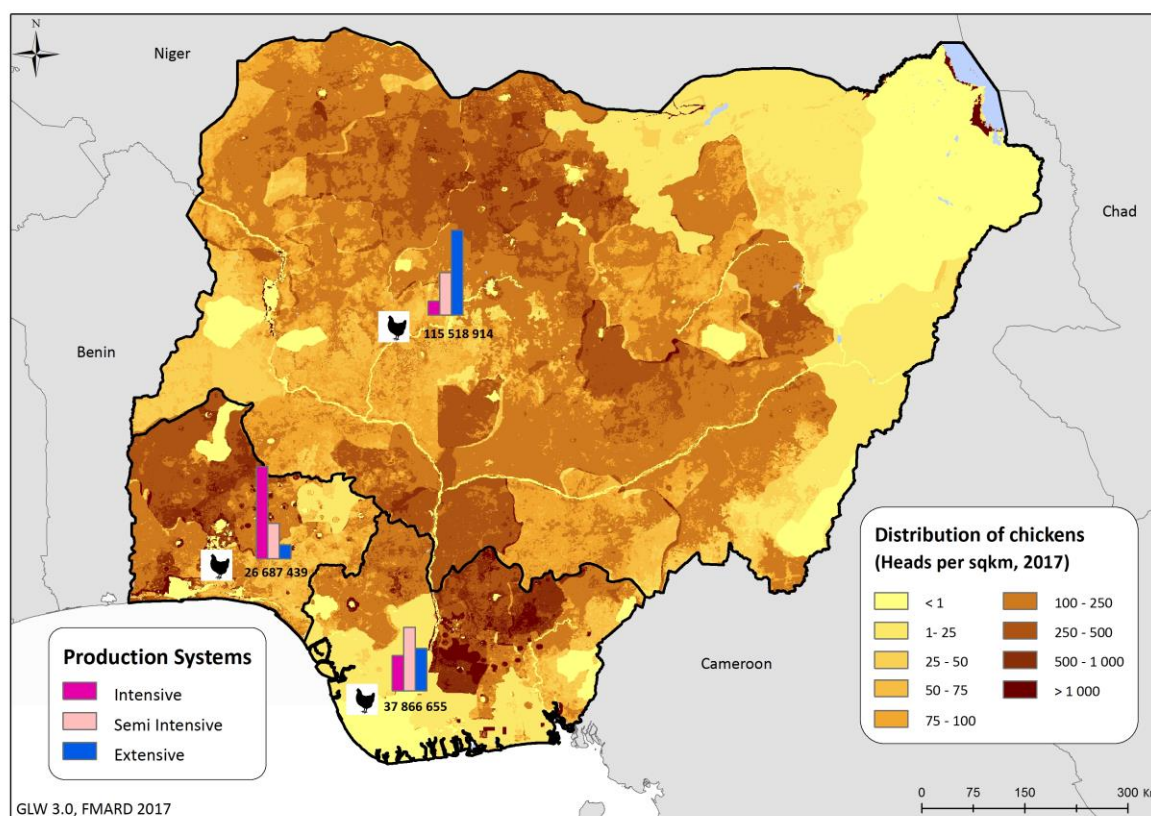
There are three major poultry production systems in Nigeria: the extensive, the semi-intensive and the intensive system. Table 1 present the distribution of the chicken population by production system, while Figure 1 maps the chicken population by region and the distribution of birds by production system in the different regions.

Table 1. Nigeria: Chicken population by production system

	Extensive	Semi-Intensive	Intensive
Poultry population (birds)	83 340 089	58 367 529	38 365 391

Source: GLW 3.0 and Federal Ministry of Agriculture and Rural Development, 2017

Figure 1. Nigeria: Distribution of chicken by region and production system



Source: GLW 3.0 and FMARD, 2017

3.1 The Extensive (Free-range) System

The extensive or free-range or backyard system comprises nearly half of the chicken population in Nigeria and is largely located in the Northern regions (Table A1). Production is subsistence-oriented, mainly for family consumption. The flock includes birds of different indigenous species and varying ages, which scavenge for food and water over a wide open area. There may be rudimentary shelters, though most birds roost outside in trees or nest in bushes. Because of the limited or non-existent provision for housing, village chicken are exposed to the vagaries of climate and weather stress, predators and diseases, with Newcastle disease being very common. Productivity is low. To sum up, the extensive or free range poultry system is characterized by:

- Subsistence-oriented production;
- A multitude of indigenous species;
- Rudimentary production and husbandry practices;
- Low levels of egg productivity, between 50 to 65 eggs per hen per year;
- Low body weights.

3.2 The Semi-intensive System

The semi-intensive system is a family-based production system and comprises about one third of total chicken population in Nigeria. Most semi-intensive chicken farms are located in the South West (44%), 36 percent in the South South and South East, and the remaining 20 percent in the North Central, North West and North East. The average flock size ranges from about 50 to about 2000 birds, including both improved and indigenous breeds, with farmers providing feed, water, housing to birds and complying with basic biosecurity measures. Producers usually sell live birds through informal marketing channels, though the Federal Government has been supporting both the establishment of formal markets through public private partnerships (PPPs) and some States also regulated the functioning of live bird markets. The main characteristics of this system are:

- Subsistence and market-oriented production;
- Indigenous and improve breed;
- Basic production and husbandry practices;
- Basic application of biosecurity measures
- Medium to low productivity levels.

3.3 The Intensive (Commercial/Integrated) System

The intensive poultry sector includes great-grandparent and grandparent hatcheries as well as layer and broiler farms. The sector consists of a few number of fully, vertically integrated commercial operators, supported by adequate capital and technical capacity and utilizing appropriate feeding, housing and health practices. There are three typologies of integrated poultry farms: (i) commercial peri-urban enterprises raising between 2 000 to 5 000 birds; (ii) clustered commercial enterprises raising more than 5 000 birds. They are located in urban outskirts and rely on the same service providers; (ii) commercial poultry integrators, which own their own hatcheries, feed mills and processing facilities, and have flocks that can reach over 100 000 birds. Most poultry operators listed on the Poultry Association of Nigeria (PAN) are franchisees or have joint ventures with global poultry operators. The annual production capacity of the commercial poultry sector in Nigeria is estimated at 96 981 tonnes of dressed broilers, 40 739 tonnes of dressed layers and 8 216 million eggs (FAO, 2006). About 21 percent of the chicken in Nigeria are raised in commercial/integrated farms. Birds reach consumers as dressed and processed chicken in large and small retail outlets. Biosecurity measures are in place and productivity levels are high, though Gumboro and Highly Pathogenic Avian Influenza have recently affected some commercial poultry farms. The main characteristics of this system are:

- Market-oriented production;
- Exotic breeds;
- Capital intensive production and husbandry practices;
- Application of biosecurity measures;
- High productivity levels.

4. Dairy cattle production in Nigeria: a snapshot

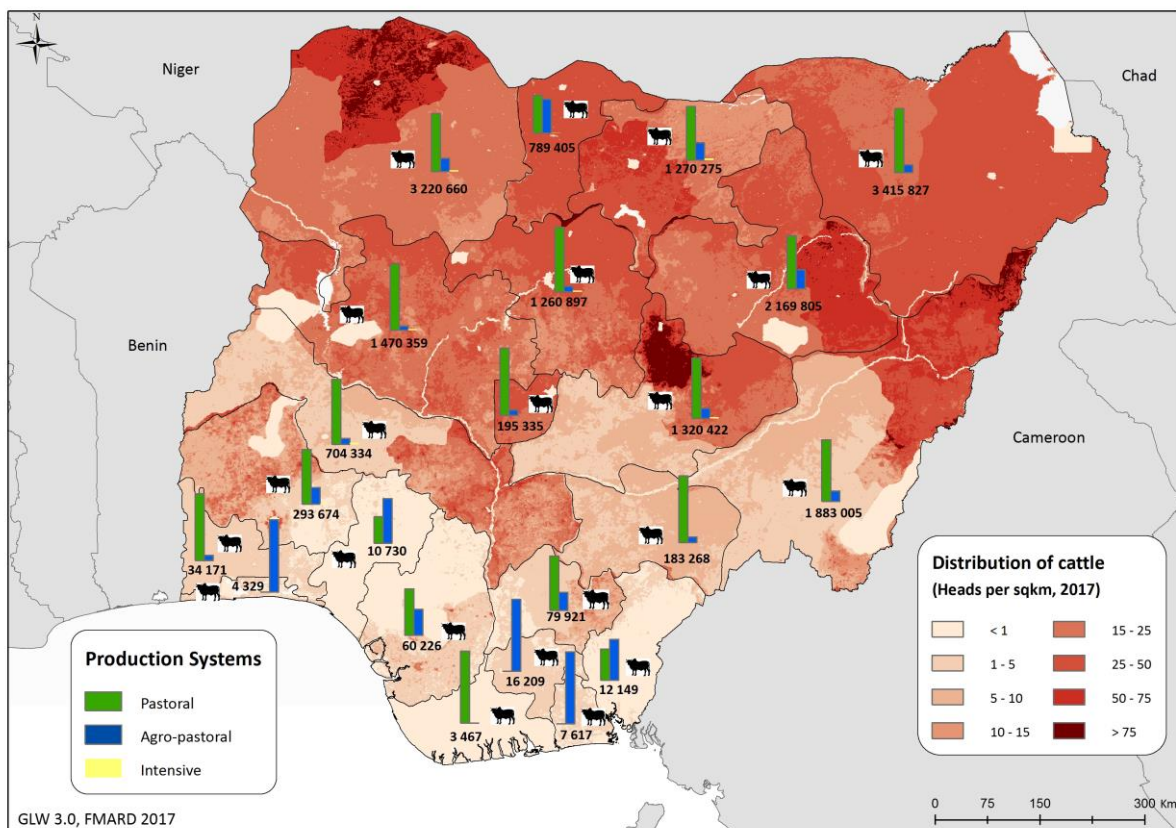
There are an estimated 18.2 million heads of cattle in Nigeria. They are predominantly managed in large herds by semi-sedentary and transhumant pastoralists. Most animals are dual-purpose indigenous breeds, such as the Bunaji, Sokoto Gudali and Rahaji. Large scale commercial farms raise imported exotic breeds and their crosses. There are three dairy cattle production systems in Nigeria: the extensive or traditional system, the semi-intensive (agro-pastoral) and the intensive (modern) system (UAA, 2011). About 82 percent of animals are raised in extensive systems; 17 percent in semi-intensive systems; and about 1 percent in intensive system (Table 2). A fourth production system, the commercially oriented urban farmers, have started to emerge but is still very marginal (Makun, 2018). Pastoral and agro-pastoral systems are pervasive throughout the country (Figure 2).

Table 2. Nigeria: Cattle population by production system

	Extensive	Semi-intensive	Intensive
Cattle population	15 111 309	3 089 804	203 548

Source: GLW 3.0 and Federal Ministry of Agriculture and Rural Development, 2017

Figure 2 Nigeria: distribution of cattle by region and production system



Source: GLW 3.0 and FMARD, 2017

Current milk production amounts to 585 000 tonnes of milk per year, constituting 13 percent of the West African milk production. According to a 2014 industry report, the dairy industry is second largest segment in the food industry in Nigeria. It has been growing at the rate of 8 percent since 2010, and generated an estimated revenue of over 345 million Naira (USD 2 billion) in 2013 (Celestine, 2014). However, Nigeria dairy production is mainly subsistence oriented with low productivity: the average production per cow per year is 213 litres, less than one tenth of the global average (Makun, 2018). The country is a net importer of milk and dairy products: national production covers about 40 percent of the milk demand, with the remaining 60 percent coming from imports (Makun, 2018). The consumption level of dairy products is low, estimated at around 10 litres per person per year, which is one fourth of the global average.

4.1 The extensive (pastoral) dairy production system

The extensive dairy production system characterize arid and semi-arid lands and involves movement of animals from one location to another in search of pasture and water. Herders keep cattle as well as other animals, such as small ruminants, and do not engage in any cropping activities. Production is subsistence oriented, but it is difficult to quantify its level because of within country and cross-country animal movements (Makun, 2018). The main characteristics of this production system are the following:

- Herds are typically large, ranging from 100 to 300 heads of cattle;
- Cattle are of variety of indigenous breeds (e.g. Bunaji, Gudali, etc.);
- Animals are fed and watered opportunistically, without any or with minimal feed supplementaion;
- Health practices are minimal, with biosecurity and biosafatey measures, when in place, provided by the government;
- Productivity is low with milk yield ranging between 0.5 and 1.5 litres per day;
- Surplus milk is sold in local markets or processed into local products.

4.2 The semi-intensive (agro-pastoral) dairy production system

In semi-intesive of agro-pastoral system production system farmers both grow crops and raise dairy animals, with the land devoted to crop and that used for grazing clearly demarcated (UAA, 2011). Farmers take animals to grazing areas wnad water sources depending on the seasons and production is both subsistence-oritned and commercial (Makun, 2018). The main characteristics of this production system are as follows.

- Herds comprise between 20 and 100 animals of indigenous breeds who reproduce through natural mating;
- Grazing areas are the major source of feed for the animals, which are also fed crop by-products;
- Biosecurity and biosafety measures are limited;
- Production levels are low, around 1-3 litres per cow per day, with milk production also being irregular and rarely recorded;
- The limited surplus milk produced is processed into sour milk, yoghurt, butter and soft cheese.

4.3 Intensive (commercial) dairy production system

The intensive or commercial dairy system in Nigeria contributes about 5 percent to total milk production in the country (Makun, 2018). Dairy farms differ in scale, they can be small, medium and large. In all cases, production is commercially-oriented and farmers tend to maximise productivity: animals are of exotic breeds and cross-breeds; feeding and biosecurity / biosafety measures are appropriate, with animal kept indoors or in shed or paddocks; milking is an automated process. (Makun, 2018). Eighty percent of the commercial dairy farms are located in the North Central region. The main characteristics of this system are as follows (UAA, 2011; Celestine, 2014; Makun, 2018):

- The herd size varies from 50 to 500 cows in small scale operations; from 500 to 1000 cows in medium size farms, and it comprises more than 1000 cows in large scale operations;
- Cattle are of exotic breeds, though in small scale operators in peri-urban areas can also keep cross and selected indigenous breeds;
- Animals are fed with high-quality forage and feed supplement (oil-rich agricultural by-products, mineral licks);
- Biosecurity and biosecurity measures are in place, and there is proper housing for the animals;
- Productivity levels are higher with respect to the other dairy production systems, averaging about 8 litres of milk per day per cow.

5. Conclusions

The poultry and dairy cattle production systems in Nigeria are highly heterogenous, comprising small to medium to large farmers. Subsistence-oriented producers, however, both keep the largest share of birds / animals and contribute the most to national production. They are relatively inefficient, relying on indigenous breeds and utilizing rudimentary production and husbandry practices. As a consequence, there are major opportunities to boost the productivity of the poultry and cattle, both through adopting productivity enhancing practices and technologies within systems and through facilitating farmers' movement from low-productive to more productive production systems. However, a number of constraints make it challenging to support a transition towards more productive and efficient systems, such as limited data and information to design effective policies and investments; inadequate farmers' access to information and services, both public and private, as well as to inputs, including feed and animal health services in particular; lack of finance and capital; herdsman and farmer conflicts; bottlenecks along the supply chain that limit farmers' and other actors' incentives to long-term investments, which are necessary to boost productivity.

The Agricultural Promotion Policy (2016-2020) is a major attempt to address several of the constraints that limit the development of the poultry and dairy sector. At the same time, given the expected transformative changes in the country, and the livestock sector in particular are anticipated to go through in 2050, the population of Nigeria will reach about 400 million from 180 million people today; 280 million people will live in urban areas vis-a-vis 90 million today; consumers will be better off, with per-capita income estimated to be around USD 10 000 per year in 2050, over four times its current level, and will increasingly demand animal source food – it is of paramount importance the government anticipate the challenges the transformation of the livestock sector will bring about and design policies and investments that ensure a sustainable long-term development of the sector, from a socio-economic, environmental and public health perspective.

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Annex

A1. Poultry population by states and production systems

Region	State	Extensive	Semi-intensive	Intensive
SW	Ekiti	10 829	27 074	70 391
SW	Lagos	516 643	1 291 608	3 358 181
SW	Ogun	665 366	1 663 416	4 324 881
SW	Ondo	124 337	310 842	808 189
SW	Osun	264 450	661 125	1 718 924
SW	Oyo	1 087 118	2 717 796	7 066 269
SS	Akwa Ibom	862 075	1 293 113	718 396
SS	Bayelsa	-	-	-
SS	Rivers	454 899	682 348	379 082
SS	Cross River	732 512	1 098 768	610 427
SS	Edo	1 235 142	1 852 713	1 029 285
SS	Delta	605 243	907 864	504 369
SE	Imo	2 660 657	3 990 985	2 217 214
SE	Anambra	1 135 511	1 703 267	946 260
SE	Abia	368 370	552 555	306 975
SE	Enugu	1 550 229	2 325 343	1 291 857
SE	Ebonyi	1 755 360	2 633 040	1 462 800
NE	Bauchi	2 900 884	1 450 442	483 481
NW	Katsina	4 784 977	2 392 488	797 496
NW	Kano	7 027 813	3 513 906	1 171 302
NC	Benue	1 705 697	852 849	284 283
NW	Kaduna	4 282 503	2 141 252	713 751
NW	Kebbi	3 829 639	1 914 820	638 273
NE	Borno	950 978	475 489	158 496
NW	Jigawa	3 828 654	1 914 327	638 109
NE	Taraba	3 787 169	1 893 585	631 195
NC	Niger	5 417 244	2 708 622	902 874
NW	Sokoto	2 962 218	1 481 109	493 703
NC	Plateau	4 658 565	2 329 283	776 428
NC	Nassarawa	2 068 835	1 034 417	344 806
NE	Adamawa	221 017	110 509	36 836
NC	Kogi	5 034 578	2 517 289	839 096
NE	Gombe	2 366 608	1 183 304	394 435
NW	Zamfara	5 865 824	2 932 912	977 637
NE	Yobe	4 870 625	2 435 313	811 771
NC	Kwara	1 431 008	715 504	238 501
NC	Abuja	1 316 513	658 257	219 419
TOTAL		83 340 089	58 367 529	38 365 391

Source: Gridded Livestock of the World 3.0 (FAO) and Federal Ministry of Agriculture and Rural Development, 2017

A2. Cattle population by states and production systems

	Extensive	Semi-Intensive	Intensive
Abia Imo	0	16 209	0
Abuja	181 466	13 906	0
Adamawa Taraba	1 608 086	272 328	1 741
Akwa Ibom	0	7 617	0
Anambra Enugu Ebonyi	60 181	19 769	0
Bauchi Gombe	1 592 637	574 994	2 002
Bayelsa Rivers	3 467	0	0
Benue	169 523	13 752	78
Borno Yobe	3 033 254	375 741	6 566
Cross River	5 273	6 882	0
Edo Delta	38 545	21 700	0
Ekiti Ondo	3 992	6 653	83
Jigawa Kano	940 004	304 866	25 406
Kaduna	1 134 807	100 872	25 218
Katsina	412 859	371 020	5 202
Kogi Kwara	633 901	56 347	14 087
Lagos	0	4 329	0
Nassarawa Plateau	1 109 154	184 859	26 408
Niger	1 352 730	88 222	29 407
Ogun	31 711	2 475	0
Osun Oyo	223 192	67 545	2 937
Sokoto Kebbi Zamfara	2 576 528	579 719	64 413
TOTAL	15 111 309	3 089 804	203 548

Source: Gridded Livestock of the World 3.0 (FAO) and Federal Ministry of Agriculture and Rural Development, 2017



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