Trends, prospects and the socio-economic contribution of poultry value chains to food security and wealth creation in Africa

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INTRODUCTION

The growth of the Africa's human population, which is expected to increase from 1,394 million in 2021 to 2,485 million in 2050 (United Nations, 2023), will take place largely in Central/Middle Africa (CA) (114% between 2021 and 2050), Western Africa (WA) (85%) and Eastern Africa (EA) (84%) while human population growth will be limited in Northern Africa (NA) (46%) and Southern Africa (SA) (26%). Urbanization rate is expected to increase from 43.0% in 2021 to 59.9% in 2050.

The number of Africans living in extreme poverty was estimated to have jumped from 284 million in 1990 to 433 million in 2018 (United Nations, 2023). In 2020, the poverty rate in sub-Saharan Africa (SSA) was estimated to have not fallen fast enough to keep up with population growth in the region (Schoch and Lakner, 2020). In 2021, hunger still affected 278 million people in Africa (FAO et al., 2022).

Poultry and people have had a shared history for thousands of years and current trends suggest that this is not about to change by 2030. While growing market is essentially benefiting large-scale operations,

access to market is also critical for small holders. Poultry birds can be sold in times of crisis and act as household insurance and economic stability. While poultry meat and eggs are the largest sources of animal protein in the human diet and poultry enterprises are high income-generating activities for value chains' actors in Africa, demands for poultry have been increasing rapidly. However, the reported trends in demands are not matched with the local production of poultry products.

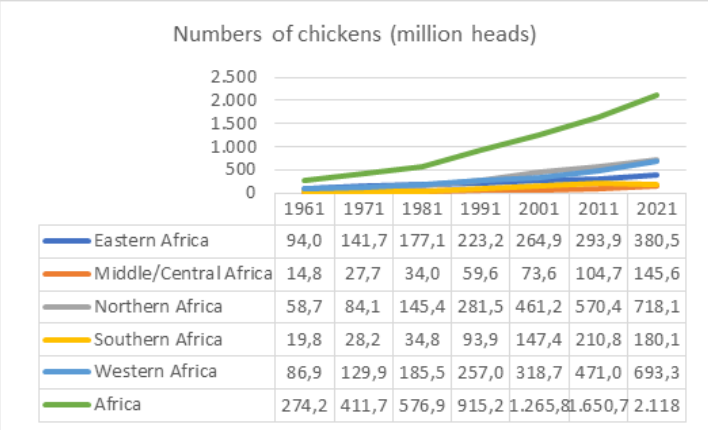
Poultry value chains (PVCs) represent the alternatives to feed the fast-growing human population and generate income to low resource value chains' actors. In Africa, poultry are kept and raised in a wide range of production systems, from small extensive scavenging to large-scale intensive systems, and provide mainly meat, eggs and manure for crop fertilisation. However, according to Branckaert and Guèye (2000) and Jim (2021), most of the conditions required by the intensive poultry sub-sector are not met in most African countries, namely (i) the ability to purchase most inputs, i.e. improved birds, feeds, vaccines, drugs and equipment; (ii) the availability of a highly skilled manpower; (iii) the presence of a strict disease control; and (iv) the existence of national domestic markets able to absorb poultry products at attractive prices by consumers with adequate purchasing power. In fact, prior to developing medium to large-scale poultry units, either for broiler or egg production, it is important to achieve either self-sufficiency in cereal products or to generate the required hard currencies provided by the export of expensive raw materials, or to have a developed services sector. Poultry mainly reared in large scale and intensive operations make them one of the fastest growing agricultural sub-sectors.

Current state and trends in poultry numbers

The Africa's total poultry numbers were estimated in 2022 to be 2,425 million heads of poultry birds, consisting of 2,352 million chickens, 32 million turkeys, 22 million geese and 19 million ducks. Thus, chickens accounted for 97.0% of Africa's total poultry numbers in 2022. About 34% of chickens were kept in Northern Africa (NA), 33% in Western Africa (WA), 18% in Eastern Africa (EA), 8% in Southern Africa (SA) and 7% in Central Africa (CA) (FAOSTAT, 2024) (**Table 1 and Figure 1**).

Table 1. *Countries of Africa's sub-regions (FAOSTAT, 2024).*

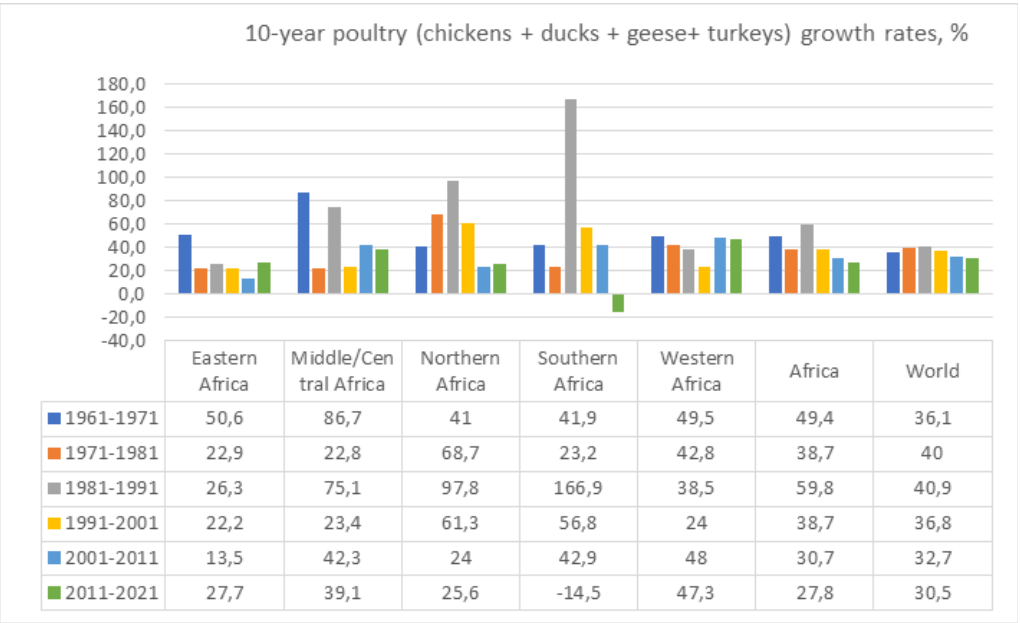
Africa's geographic area	Countries
Eastern Africa	Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Mayotte, Mozambique, Réunion, Rwanda, Seychelles, Somalia, South Sudan, Uganda, United Republic of Tanzania, Zambia, and Zimbabwe
Middle/Central Africa	Angola, Cameroon, Central African Republic, Chad, Congo, Democratic Republic of Congo, Equatorial Guinea, Gabon, and Sao Tome and Principe
Northern Africa	Algeria, Egypt, Libya, Morocco, Sudan, Tunisia, and Western Sahara
Southern Africa	Botswana, Eswatini, Lesotho, Namibia, and South Africa
Western Africa	Benin, Burkina Faso, Cabo Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Saint Helena, Ascension and Tristan da Cunha, Senegal, Sierra Leone, and Togo



	1961	1971	1981	1991	2001	2011	2021
Eastern Africa	94,0	141,7	177,1	223,2	264,9	293,9	380,5
Middle/Central Africa	14,8	27,7	34,0	59,6	73,6	104,7	145,6
Northern Africa	58,7	84,1	145,4	281,5	461,2	570,4	718,1
Southern Africa	19,8	28,2	34,8	93,9	147,4	210,8	180,1
Western Africa	86,9	129,9	185,5	257,0	318,7	471,0	693,3
Africa	274,2	411,7	576,9	915,2	1.265,8	1.650,7	2.118

Figure 1. *Numbers of chickens in Africa and by its sub-regions (Data from FAOSTAT, 2024).*

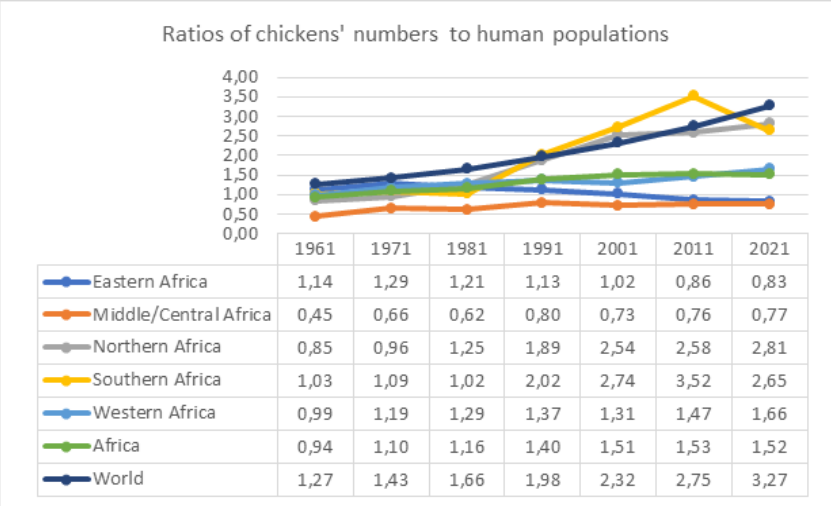
Poultry numbers are ones of the fastest-growing animal agriculture species in Africa with an average 10-year growth rate of 40.9% in Africa compared with 36.2% worldwide from 1961 to 2021, such a growth is much more noticeable in NA (53.1%) and SA (52.9%), moderate in CA (48.2%), WA (41.7%) and low in EA (27.2%) (**Figure 2**).



	Eastern Africa	Middle/Central Africa	Northern Africa	Southern Africa	Western Africa	Africa	World
1961-1971	50,6	86,7	41	41,9	49,5	49,4	36,1
1971-1981	22,9	22,8	68,7	23,2	42,8	38,7	40
1981-1991	26,3	75,1	97,8	166,9	38,5	59,8	40,9
1991-2001	22,2	23,4	61,3	56,8	24	38,7	36,8
2001-2011	13,5	42,3	24	42,9	48	30,7	32,7
2011-2021	27,7	39,1	25,6	-14,5	47,3	27,8	30,5

Figure 2. *10-year poultry (chickens + ducks + geese + turkeys) growth rate in the world, Africa and by its sub-regions (Calculated from data from FAOSTAT, 2024).*

Moreover, in many African countries, the chicken numbers to human population ratio was about 1.5 (**Figure 3**) and was significantly correlated with the per capita Gross Domestic Product (GDP) in 2021 ($r = 0.79$, $p < 0.05$). Thus, there were approximately three fowls for two persons. The ratio tended to increase at a higher rate in NA, SA and WA, moderate rate in CA, while in EA region this ratio tended to be decreasing.



	1961	1971	1981	1991	2001	2011	2021
Eastern Africa	1,14	1,29	1,21	1,13	1,02	0,86	0,83
Middle/Central Africa	0,45	0,66	0,62	0,80	0,73	0,76	0,77
Northern Africa	0,85	0,96	1,25	1,89	2,54	2,58	2,81
Southern Africa	1,03	1,09	1,02	2,02	2,74	3,52	2,65
Western Africa	0,99	1,19	1,29	1,37	1,31	1,47	1,66
Africa	0,94	1,10	1,16	1,40	1,51	1,53	1,52
World	1,27	1,43	1,66	1,98	2,32	2,75	3,27

Figure 3. *Ratios of chickens' numbers to human populations in the world, Africa and by its sub-regions (Calculated from data from FAOSTAT, 2024).*

Current state and trends in poultry production systems

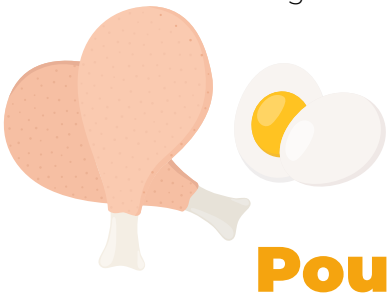
Poultry production is very divers in Africa, and there are many typologies available, responding to different aims and objectives. This diversity can be characterised considering factors that may include the main purpose of the flock, feed, orientation and the type of housing.

Based on intensification level, three main types of poultry production systems can be considered: extensive scavenging system, intensified system and intensive system (**Table 2**). In Africa, it is estimated that 50%, 30% and 20% of the poultry stocks are kept in extensive scavenging, intensified and intensive systems, respectively (Guèye, 2024).

Table 2. *Characteristics of poultry production systems in Africa (Adapted from Branckaert and Guèye, 2000; Besbes et al. 2012; Thieme et al., 2014; Chaiban et al., 2020; Jim, 2021 and Guèye, 2022).*

Criteria	Extensive scavenging	Intensified	Intensive
Intensification level	Low output/low input	Intermediate output/ intermediate input	High output/ high input
Production/farming system	Mixed; poultry and crops; livestock and crops; often landless	Usually poultry only	Poultry only
Other livestock raised	Usually	Sometimes	No
Flock size (adult birds)	1-50	51-200 local poultry; 51 - 900 broilers; 30 - 500 layers	> 901 broilers; > 501 layers
Poultry breeds	Local	Commercial or local or crossbred	Exotic hybrid genetic stocks
Source of new chicks	Natural incubation	Commercial day-old chicks or pullets or rarely natural incubation	Commercial day-old chicks or pullets or artificial incubation
Feed source	Scavenging; almost no or occasional supplementation	Limited scavenging; regular supplementation; commercial sub-balanced rations or "self-made" sub-balanced rations	Commercial balanced rations
Drinking water	Almost no dedicated supply or occasional supply	Regular supply	Regular supply
Poultry housing	Seldom or sometimes; usually made from local materials or kept in [owner's] house [overnight]	Yes; moderate quality houses built using local materials	Yes; conventional materials; good quality commercial housing
Access to veterinary services and veterinary pharmaceuticals	Rarely or sometimes	Yes	Yes; stringent biosecurity systems
Mortality (without any vaccinations)	Very high >70%	Very high >70%	Very low <5%
Mortality (with effective vaccination against endemic vaccine-preventable diseases)	Medium <30%	Low to medium <20%; low <10%	Very low <5%
Access to urban markets	Rarely or indirect	Most of the time; yes	Yes
Products	Live birds, meat, eggs	Live birds, meat, eggs	Specialized on a single product: meat or eggs
Time devoted each day to poultry management	<1 hour	1 hour	>1 hour

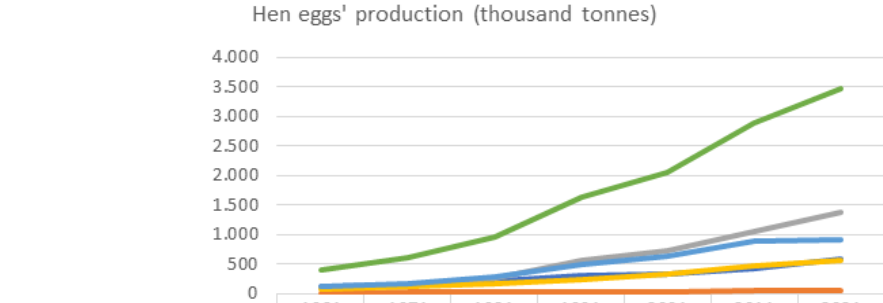
Extensive scavenging and intensified poultry systems in Africa which try to directly compete with large intensive poultry operations are at risk of being pushed out of the market because they lack the political and economic power of the larger companies, or the ability to exploit economies of scale (McLeod et al., 2009; Heise et al., 2015; Chaiban et al., 2020). PVCs' growing market is essentially benefiting large-scale poultry operations and access to market is critical for small holders (Mottet and Tempio, 2017). For example, rural women in many developing countries tend to engage in smallholder egg and poultry meat production (Thieme et al., 2014), but increased levels of intensification in egg and chicken meat production have been shown to decrease the number of women involved in poultry keeping (Thieme et al., 2014).



Poultry as a source of food

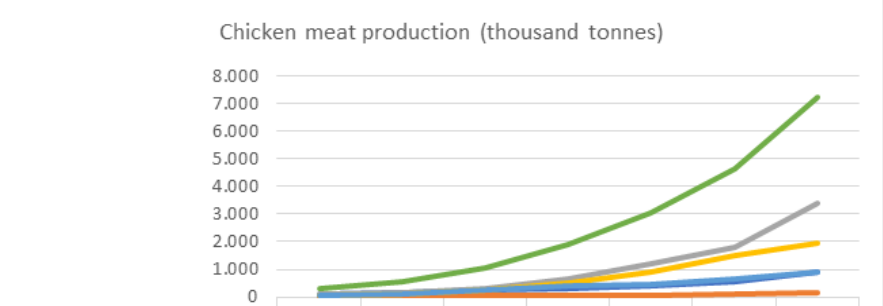
Throughout Africa, especially in the less-favoured areas such as non-coastal, remote, hilly and densely populated regions with no mineral

resources and where the arable land is often scarce, poultry production is one of the most readily available and affordable sources of animal protein for PVCs' actors. The total poultry production of Africa was estimated in 2022 to be 4,008 thousand metric tons (MT) of hen eggs; 7,810 thousand MT of chicken meat; 250 thousand MT of turkey meat; 86 thousand MT of duck meat; 26 thousand MT of goose meat and 17 thousand MT of meat of pigeons and other birds (FAOSTAT, 2024). About 40% and 26 % of Africa's hen eggs were produced in NA and WA, respectively (**Figure 4**). Chicken meat was produced mainly in NA (47%), followed by SA (27%) (**Figure 5**). Other poultry meats in Africa were mainly produced in NA (93% of turkey meat) (**Figure 6**); in EA and NA with 59% and 37% of duck meat, respectively (**Figure 7**); and in NA and EA with 52% and 46% of goose meat, respectively (**Figure 8**).



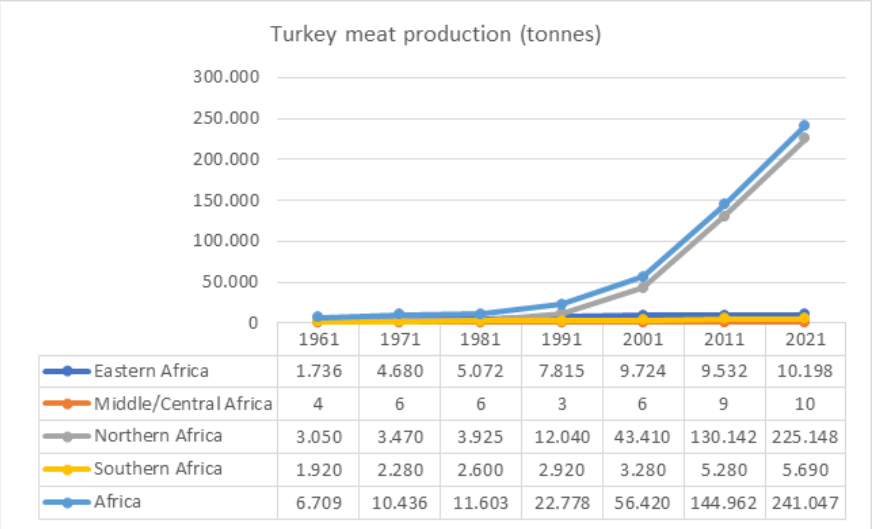
	1961	1971	1981	1991	2001	2011	2021
Eastern Africa	109,6	152,8	206,6	310,5	321,8	429,8	596,5
Middle/Central Africa	12,2	19,8	26,1	34,9	37,4	44,5	39,6
Northern Africa	96,1	148,4	271,5	560,9	716,6	1.053,6	1.367,9
Southern Africa	64,4	109,1	164,9	236,6	338,4	462,7	557,9
Western Africa	109,4	172,4	285,1	488,9	626,8	894,0	909,4
Africa	391,8	602,5	954,2	1.631,7	2.041,0	2.884,5	3.471,3

Figure 4. *Hen egg production in Africa and by its sub-regions (Data from FAOSTAT, 2024).*



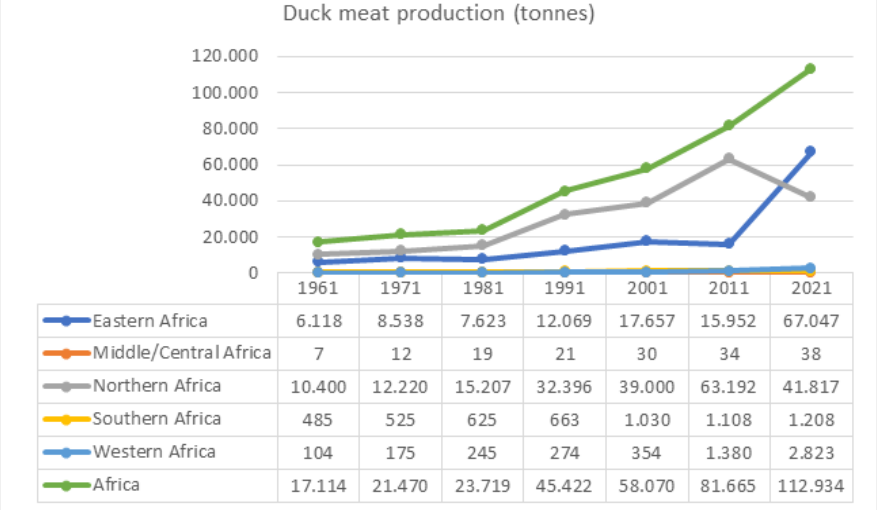
	1961	1971	1981	1991	2001	2011	2021
Eastern Africa	96,8	159,9	232,0	284,2	387,7	550,2	878,5
Middle/Central Africa	14,2	30,3	36,5	53,2	68,0	125,7	160,9
Northern Africa	102,2	144,8	319,4	653,2	1.221,5	1.784,4	3.372,5
Southern Africa	33,3	110,6	247,6	507,7	913,0	1.510,5	1.936,2
Western Africa	69,4	121,8	230,1	378,2	451,2	653,3	902,9
Africa	316,0	567,4	1.065,5	1.876,5	3.041,4	4.624,1	7.251,0

Figure 5. *Chicken meat production in Africa and by its sub-regions (Data from FAOSTAT, 2024).*



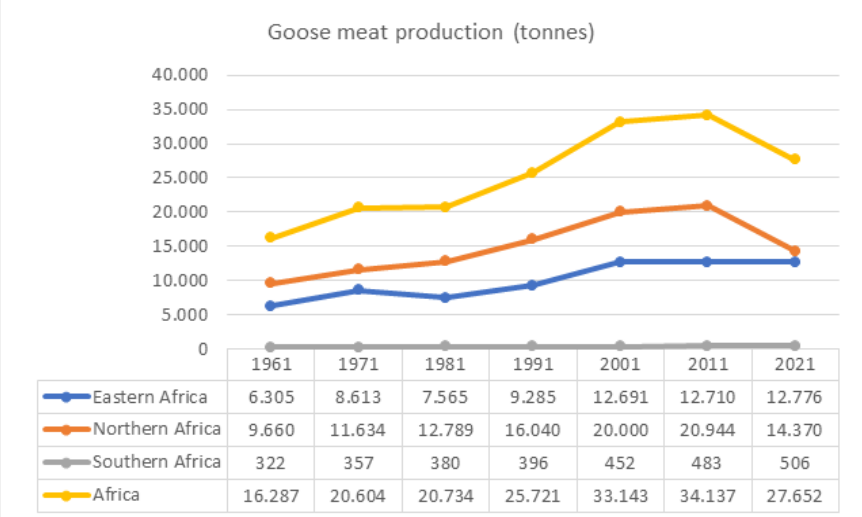
	1961	1971	1981	1991	2001	2011	2021
Eastern Africa	1.736	4.680	5.072	7.815	9.724	9.532	10.198
Middle/Central Africa	4	6	6	3	6	9	10
Northern Africa	3.050	3.470	3.925	12.040	43.410	130.142	225.148
Southern Africa	1.920	2.280	2.600	2.920	3.280	5.280	5.690
Africa	6.709	10.436	11.603	22.778	56.420	144.962	241.047

Figure 6. *Turkey meat production in Africa and by its sub-regions (Data from FAOSTAT, 2024).*



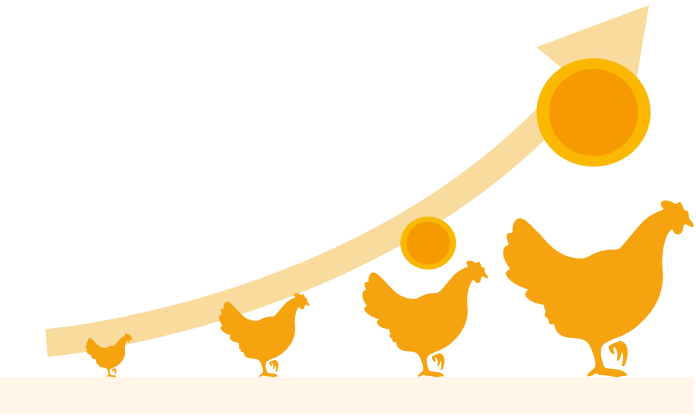
	1961	1971	1981	1991	2001	2011	2021
Eastern Africa	6.118	8.538	7.623	12.069	17.657	15.952	67.047
Middle/Central Africa	7	12	19	21	30	34	38
Northern Africa	10.400	12.220	15.207	32.396	39.000	63.192	41.817
Southern Africa	485	525	625	663	1.030	1.108	1.208
Western Africa	104	175	245	274	354	1.380	2.823
Africa	17.114	21.470	23.719	45.422	58.070	81.665	112.934

Figure 7. *Duck meat production in Africa and by its sub-regions (Data from FAOSTAT, 2024).*



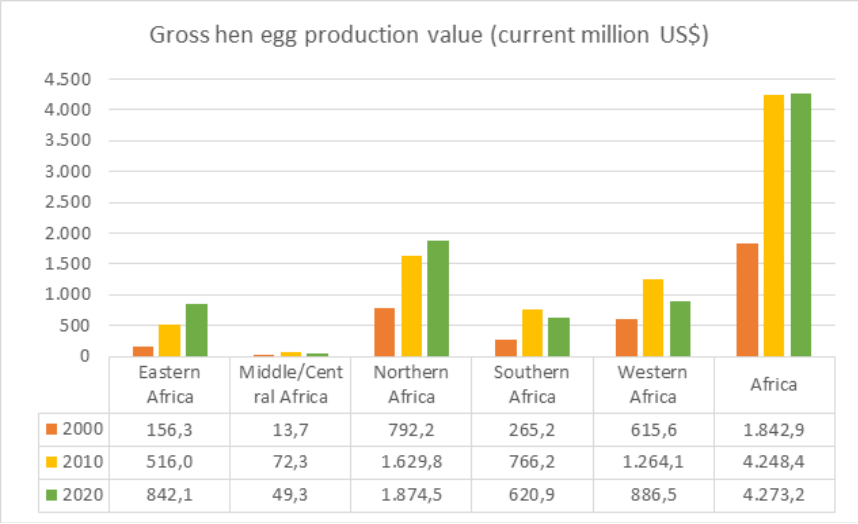
	1961	1971	1981	1991	2001	2011	2021
Eastern Africa	6.305	8.613	7.565	9.285	12.691	12.710	12.776
Northern Africa	9.660	11.634	12.789	16.040	20.000	20.944	14.370
Southern Africa	322	357	380	396	452	483	506
Africa	16.287	20.604	20.734	25.721	33.143	34.137	27.652

Figure 8. *Goose meat production in Africa and by its sub-regions (Data from FAOSTAT, 2024).*



PVCs as sources of wealth creation

The Africa's poultry production systems, which are sources of income and well-being for PVCs' actors, are financially economic and highly profitable. The gross poultry production values in Africa were estimated in 2022 to be 4,947 million US$ for hen eggs; 13 million US$ for eggs from other poultry birds; 14,459million US$ for chicken meat; 14,366 million US$ for indigenous chicken meat; 565 million US$ for turkey meat; 532 million US$ for indigenous turkey meat; 289 million US$ for duck meat; 285 million US$ for indigenous duck meat; 101 million US$ for goose meat; and 51 million US$ for meat of pigeons and other poultry birds (FAOSTAT, 2024). About 44%, 21% and 20 % of Africa's gross hen egg values were produced in NA, WA and EA, respectively (**Figure 9**). Gross chicken meat values were produced mainly in NA (47%), followed by SA (30%) (**Figure 10**). Gross indigenous chicken meat values were mainly produced in NA (42%), SA (26%) and EA (21%) (**Figure 11**).



	Eastern Africa	Middle/Central Africa	Northern Africa	Southern Africa	Western Africa	Africa
2000	156,3	13,7	792,2	265,2	615,6	1.842,9
2010	516,0	72,3	1.629,8	766,2	1.264,1	4.248,4
2020	842,1	49,3	1.874,5	620,9	886,5	4.273,2

Figure 9. *Gross hen egg production value in Africa and by its sub-regions (Data from FAOSTAT, 2024).*

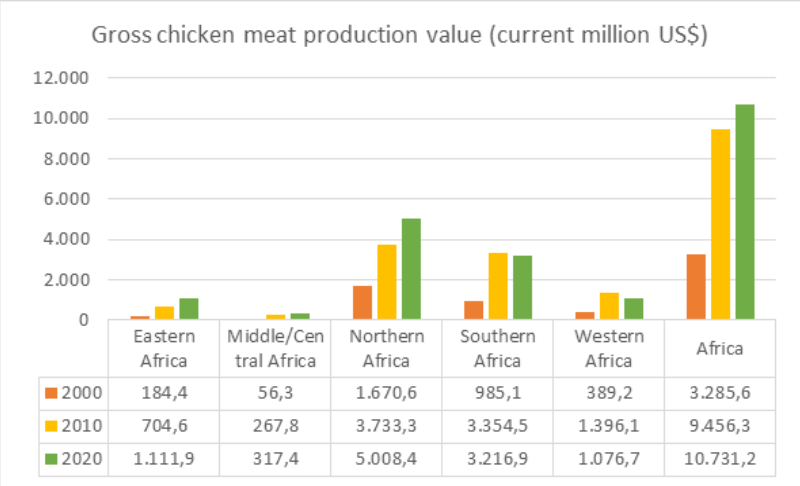


Figure 10. *Gross chicken meat production value in Africa and by its sub-regions (Data from FAOSTAT, 2024).*

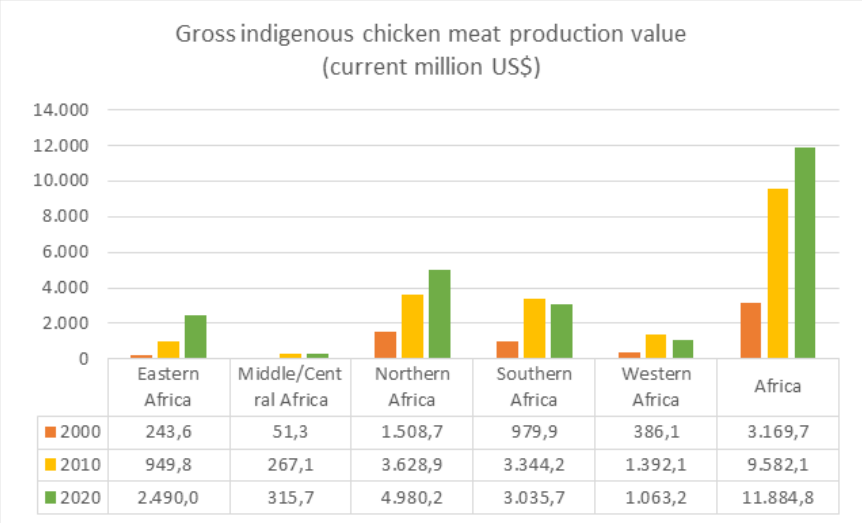


Figure 11. *Gross indigenous chicken meat production value in Africa and by its sub-regions (Data from FAOSTAT, 2024).*

In Africa, the market size for poultry products is projected to grow significantly, with eggs increasing from 2.0 million MT in 2005/7-2030 to 2.5 million MT in 2030-2050, and poultry meat rising from 3.6 million MT to 5.3 million MT over the same periods, while in SSA, the demand for poultry meat is projected to increase by 191% by 2030 and by 214% by 2050 (Erdaw, 2023).

Poultry meat production in Africa is projected to grow from 6.7 to 8.7 million MT between 2020/22 and 2032, while the average annual growth of poultry meat production is projected to decrease from 2.82 % over 2013-22 to 2.46 % over 2023-32 (OECD and FAO, 2023). OECD and FAO (2022) reported that the projected significant growth in poultry production In SSA will be underpinned by a combination of area expansion, better management practices and intensification of poultry flocks, while in NA poultry production growth in NA is expected to be driven by the strong growth

in poultry meat production.

Egg production in Africa is projected to grow from 3.6 to 4.1 million MT between 2020/22 and 2032, and the average annual growth of egg production is projected to increase from 1.46 % over 2013-22 to 2.00 % over 2023-32 (OECD and FAO, 2023)..

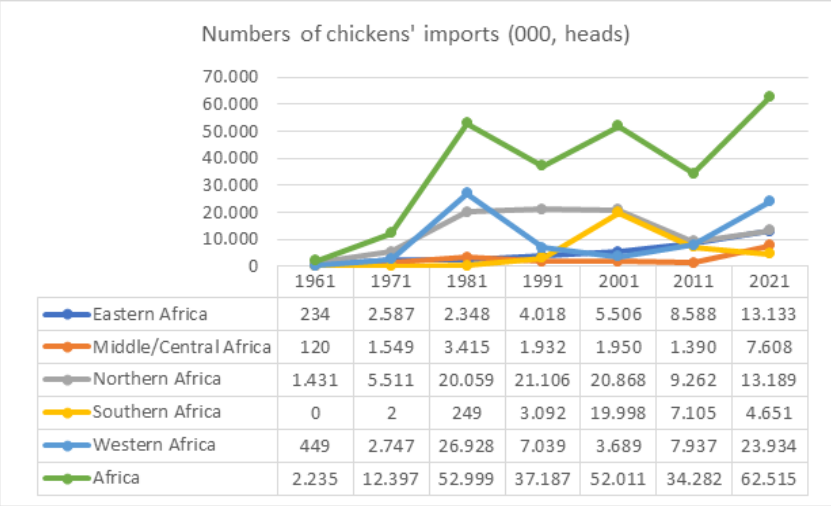
By far the costliest input to intensification of poultry production is feed, which, in highly intensive poultry operations, for example, can account for 60 to 80 percent of the total cost of inputs (Farrelly, 1996; Branckaert and Guèye, 2000; FAO, 2004; Mengesha, 2012a; Nkukwana, 2018; Heise et al., 2015; Jim, 2021; Erdaw and Beyene, 2022). As poultry production intensifies, it will call for commensurate increases in the production of feed, which will exert considerable pressures on land and water resources in some areas of Africa, or imports of poultry feeds, which is quite costly. In 2020, Africa produced 11.2 million MT of broiler chicken feeds and 7.9 million MT of egg layer feeds (Yıldız, 2021).

While extensive poultry production systems are still common in SSA, a greater degree of intensification has been evident, particularly in countries such as South Africa that produce surplus feed grains. Albeit from a small base, feed intensity is expected to continue increasing in the region as supply chains modernise in countries such as Zambia and Tanzania, but many smaller producers continue to use non-grain, often informally procured feed inputs (OECD and FAO, 2022). With the use of feed more intensively, genetic improvements and better feed conversion over time, the amount of feed required per animal can be reduced, resulting to lower feed costs.

Current state and trends in poultry trade

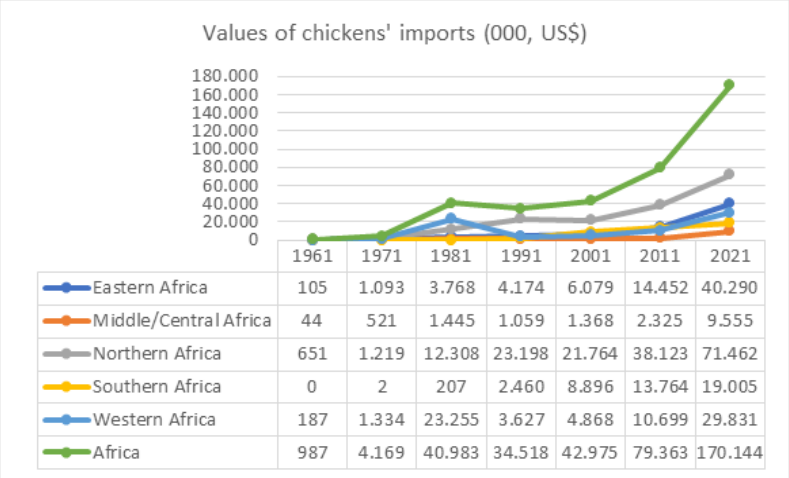
Imports of poultry products

The Africa's total chickens' imports from United States, European Union (EU), Brazil, Argentina, Mexico and Chile were estimated in 2022 at 51 million heads, with a value of 189 million US$ (FAOSTAT, 2024). The chickens' imports tend to be increasing since 1961, but at irregular rates, except for EA and SA where the increases in values of chickens' imports have been steady. In 2021, main importers of chickens' numbers were WA (38%), NA (21%) and EA (21%) (**Figure 12**), while main importers of chickens' values were NA (42%), EA (24%) and WA (18%) (**Figure 13**).



	1961	1971	1981	1991	2001	2011	2021
Eastern Africa	234	2.587	2.348	4.018	5.506	8.588	13.133
Middle/Central Africa	120	1.549	3.415	1.932	1.950	1.390	7.608
Northern Africa	1.431	5.511	20.059	21.106	20.868	9.262	13.189
Southern Africa	0	2	249	3.092	19.998	7.105	4.651
Western Africa	449	2.747	26.928	7.039	3.689	7.937	23.934
Africa	2.235	12.397	52.999	37.187	52.011	34.282	62.515

Figure 12. *Numbers of chickens' imports in Africa and by its sub-regions (Data from FAOSTAT, 2024).*



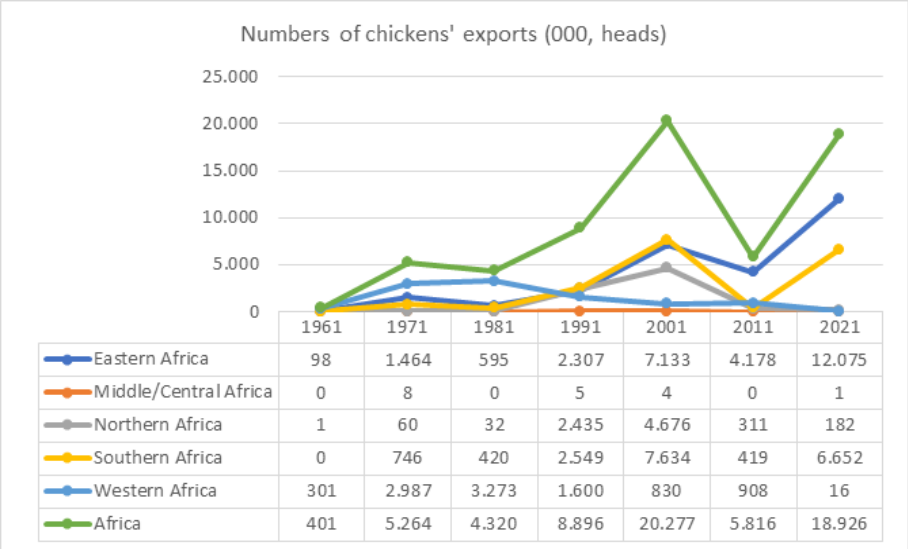
	1961	1971	1981	1991	2001	2011	2021
Eastern Africa	105	1.093	3.768	4.174	6.079	14.452	40.290
Middle/Central Africa	44	521	1.445	1.059	1.368	2.325	9.555
Northern Africa	651	1.219	12.308	23.198	21.764	38.123	71.462
Southern Africa	0	2	207	2.460	8.896	13.764	19.005
Western Africa	187	1.334	23.255	3.627	4.868	10.699	29.831
Africa	987	4.169	40.983	34.518	42.975	79.363	170.144

Figure 13. *Values of chickens' imports in Africa and by its sub-regions (Data from FAOSTAT, 2024).*

Poultry meat imported into Africa is projected to grow from 2.6 to 4.1 million MT between 2020/22 and 2032, whereas the average annual growth of poultry meat imports is projected to decrease from 5.09 % over 2013-22 to 3.63 % over 2023-32 (OECD and FAO, 2023).

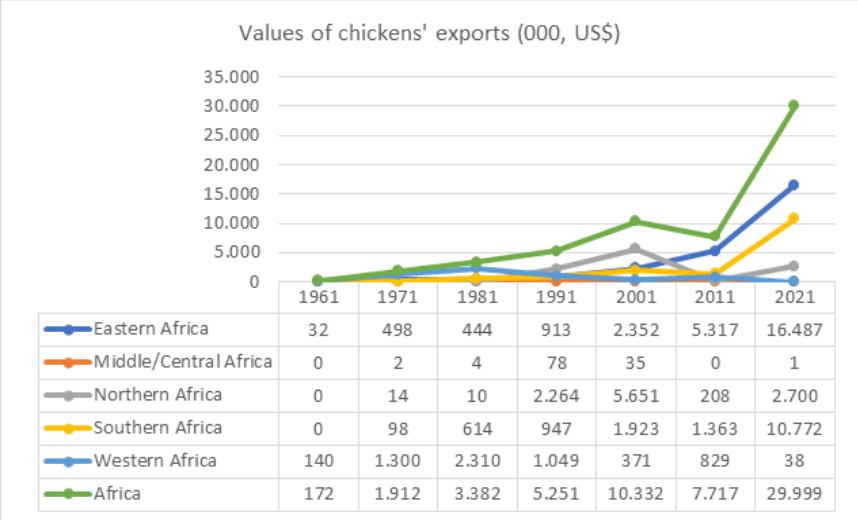
Exports of poultry products

The total chickens' exports from Africa were estimated in 2022 at 19 million heads, with a value of 45 million US$ (FAOSTAT, 2024). The chickens' exports tend to be increasing since 1961, but at irregular rates, except for EA where the increases in values of chickens' exports have been steady. The main exporters of chickens' numbers in 2021 were EA (64%) and SA (35%) (**Figure 14**), while main exporters of chickens' values were EA (55%) and SA (36%) (**Figure 15**).



	1961	1971	1981	1991	2001	2011	2021
Eastern Africa	98	1.464	595	2.307	7.133	4.178	12.075
Middle/Central Africa	0	8	0	5	4	0	1
Northern Africa	1	60	32	2.435	4.676	311	182
Southern Africa	0	746	420	2.549	7.634	419	6.652
Western Africa	301	2.987	3.273	1.600	830	908	16
Africa	401	5.264	4.320	8.896	20.277	5.816	18.926

Figure 14. *Numbers of chickens' exports in Africa and by its sub-regions (Data from FAOSTAT, 2024).*



	1961	1971	1981	1991	2001	2011	2021
Eastern Africa	32	498	444	913	2.352	5.317	16.487
Middle/Central Africa	0	2	4	78	35	0	1
Northern Africa	0	14	10	2.264	5.651	208	2.700
Southern Africa	0	98	614	947	1.923	1.363	10.772
Western Africa	140	1.300	2.310	1.049	371	829	38
Africa	172	1.912	3.382	5.251	10.332	7.717	29.999

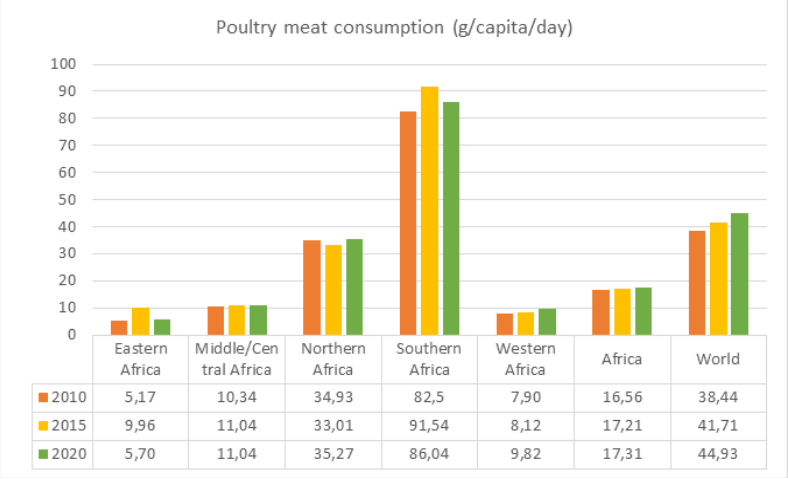
Figure 15. *Values of chickens' exports in Africa and by its sub-regions (Data from FAOSTAT, 2024).*

Poultry meat exported from Africa is projected to decrease from 0.17 to 0.13 million MT between 2020/22 and 2032, while the average annual growth of poultry meat exports is projected to decrease from 4.60 % over 2013-22 to -1.84 % over 2023-32 (OECD and FAO, 2023).

Current state and trends in consumption of poultry products

Poultry meat consumption

The per capita poultry meat consumption was estimated in 2020 to be 17.31 g per day in Africa, compared with 44.93 g per day in the world (FAOSTAT, 2024) (**Figure 16**). This was significantly correlated with the per capita GDP in 2020 ($r = 0.99$, $p < 0.001$). Chicken meat consumption in Africa constituted 83.0% of poultry meat consumption in 2022. From 2005/07 to 2050, consumption for poultry products in Africa is projected to grow from 1.6 to 6.1 million MT for eggs and from 2.9 to 11.8 for poultry meat (Erdaw, 2023). The consumption of poultry meat in Africa is projected to grow from 9.1 to 12.6 million MT between 2020/22 and 2032, whereas the average annual growth in poultry meat consumption is projected to decrease from 3.41 % over 2013-22 to 2.88 % over 2023-32 (OECD and FAO, 2023).



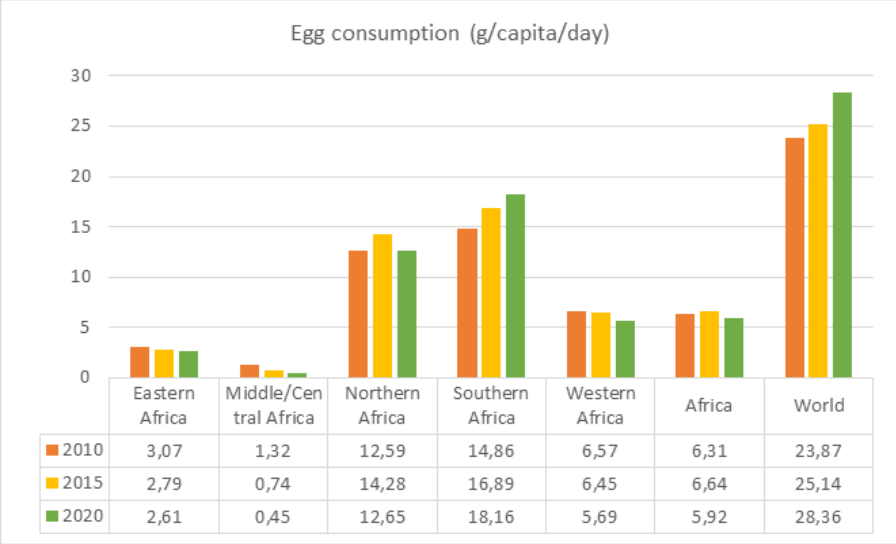
	Eastern Africa	Middle/Central Africa	Northern Africa	Southern Africa	Western Africa	Africa	World
2010	5,17	10,34	34,93	82,5	7,90	16,56	38,44
2015	9,96	11,04	33,01	91,54	8,12	17,21	41,71
2020	5,70	11,04	35,27	86,04	9,82	17,31	44,93

Figure 16. *Poultry meat consumption in the world, Africa and by its sub-regions (Data from FAOSTAT, 2024).*

Egg consumption

The egg consumption in Africa is projected to remain unchanged at 2.1 kg per capita from 2020/22 to 2032, while the average annual growth of consumption is projected to increase from -1.26 % over 2013-22 to -0.08 % over 2023-32 (OECD and FAO, 2023).

The per capita egg consumption was estimated in 2020 to be 5.92 g per day in Africa, compared with 28.36 g per day in the world (FAOSTAT, 2024) (**Figure 17**). This was significantly correlated with the per capita GDP in 2020 ($r = 0.94$, $p < 0.01$). Hen egg consumption in Africa constituted 99.8% of poultry meat consumption in 2022.



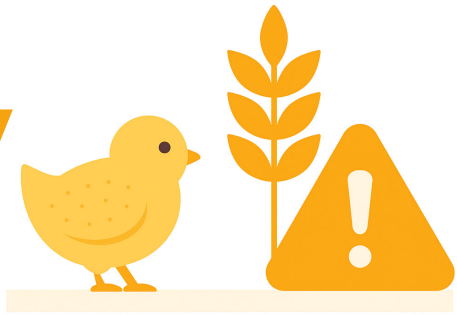
	Eastern Africa	Middle/Central Africa	Northern Africa	Southern Africa	Western Africa	Africa	World
2010	3,07	1,32	12,59	14,86	6,57	6,31	23,87
2015	2,79	0,74	14,28	16,89	6,45	6,64	25,14
2020	2,61	0,45	12,65	18,16	5,69	5,92	28,36

Figure 17. *Egg consumption in the world, Africa and by its sub-regions (Data from FAOSTAT, 2024).*

Trends of poultry products consumption

The overall trend of per capita poultry products consumption in Africa is increasing. Africans eat, on average, only 8.5 eggs per year compared to the global average of 161 eggs per person per year (Erdaw and Beyene, 2022). Besides, an African consumes on average only 3.3 kg of poultry meat per year compared to 14 kg worldwide (World Bank, 2017). Smith and Nouala (2015) predicted that the consumption of chicken and pig meat would exceed red meat consumption by 2030 in most of the SSA countries. By 2030, a 6-7 fold continent-wide increase in consumption of pork and poultry meat is expected, with especially high growth in WA. The growing middle class in Africa, along with rapid urbanisation, progressive growth of human population and income improvements, is changing its consumption patterns, moving from vegetable-based consumption to a more protein-rich diet. Mulder (2017) reported that poultry and eggs are the protein of choice for African consumers, making poultry production easier to start up and expand while attracting more investors. Thus, there are trends in building smarter PVCs establishments, such as breeding stocks, out-grower farms and processing facilities in some of the SSA countries.

Challenges of poultry value chains



Status of poultry value chains

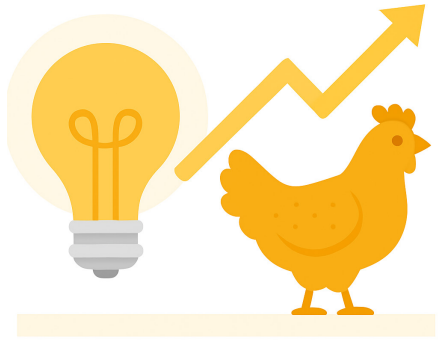
Africa, imports 83% of the food that is consumed, and this is due to overall weakness of the agricultural system (Juma, 2016). The main challenges of poultry value chains (PVCs) in Africa are lack of sufficient maize and other cereal grains, soybean, problems of feed-food competition, dependency on importation of improved breeds and day-old chicks, disease prevalence and low purchasing power of the consumers. Low employment levels, sluggish improvement of the selling of poultry products and generally the low levels of income of the society negatively influence the consumers' market in Africa. Exaggerated prices of poultry feeds in Africa are not as equally an issue to other parts of the world. The skyrocketing price and adulteration of poultry feeds are some of the upcoming concerns to some of the SSA countries (Adeyemo and Onikoyi, 2012; Heise et al., 2015; FAO, 2018; Nkukwana, 2018; Tabler et al., 2021; Erdaw and Beyene, 2022). Furthermore, the poultry industry in NA is being more severely impacted by the food crisis due to the disruption of Ukrainian grain exports and other challenges (Vorotnikov, 2023). Also, in Côte d'Ivoire, Yao (2023) reported that, while the broiler production enjoyed an average annual growth of 13.8% since 2009, the production has declined over the last three years due to the prevalence of Highly Pathogenic Avian Influenza (HPAI) outbreaks in the areas surrounding Grand Bassam. Besides, while the hatcheries produced 61 million day-old chicks in 2020, the figure is expected to reach a production of 70 million day-old chicks annually by the end of 2023. Moreover, COVID-19 has also dramatically negatively impacted poultry production due to increased freight costs for production inputs in Kenya (Mbijiwe et al., 2021) and Côte d'Ivoire (Yao, 2023)..

The market accessibility for consumers of poultry products in Africa is generally limited mostly because of poverty, levels of employment and sluggish development of the fast-food chicken outlets (Oosthuysen, 2013; Kusi et al., 2015; Erdaw and Beyene, 2022). Lack of processing facilities and markets for poultry products are the other discouraging scenarios of the Africa's poultry producers. For example, Moreki (2010) reported that lack of butchery services for small-scale broiler producers, low quality and unorganised supply of feeds and stocks, delayed allocation of land and inadequate extension service were the main challenges for the poultry industry in Botswana. Besides, most of the commercial poultry farms in Ghana, which were established in late 1960s and early 1970s, have been steeply declining since the year 2000 due

to importation of poultry products (Kusi et al., 2015). To compensate for negative effects of Europe's cheap chicken exports to Africa on local PVCs, targeted support measures would make more sense economically and socially than general import restrictions (Knößlsdorfer and Qaim, 2023). Furthermore, Adeyemo and Onikoyi (2012) reported that high feed costs, poor quality of both feed ingredients and chicks, inadequate access to and high cost of veterinary services and poor marketing information systems are some of the main challenges of the Nigeria's PVCs, which, to a large extent, have slowed down further their growth.

Future of poultry value chains

Demand for poultry in SSA will be primarily driven by the higher affordability of poultry compared to beef (OECD and FAO, 2023). Smith and Nouala (2015) reported that imports of the white meat into SSA are expected to double (16%) by 2050. Besides, SSA has no inclusive standards and quality controlling mechanisms for such imported items. There continues to be greater growth in demands for poultry products, but the small-scale producers face a strong competition, with that of the large-scale producers, specialised only in livestock (OECD and FAO, 2023). Poultry production certainly has been facing problems, including competition for grains, which needs to be resolved for the stakeholders (Farrelly, 1996; Mengesha, 2013; Tabler et al., 2021). If Africa cannot be able to increase its own grain production, it is hardly expected to increase its chicken production outputs (Mengesha, 2012a; Kusi et al., 2015; Juma, 2016).



Opportunities and prospects for poultry value chains

Opportunities of poultry value chains

Even though poultry meat is still the fastest growing subsector, production would be increasing at a slower rate than in past decades. In SSA, poultry consumption has expanded faster than any other meats (Mottet and Tempio, 2017). Poultry products' prices show a strong link to feed costs, as their production uses more grain- and protein meal-based feed. The tendency is for the ratio of poultry meat to feed prices to remain within a relatively narrow band (OECD and FAO, 2022). While extensive poultry production systems are still common in SSA, a greater degree of intensification has been evident, particularly in countries such as South Africa that produce surplus feed grains. Albeit from a small

base, feed intensity is expected to continue increasing in SA as supply chains modernise in countries such as Zambia and Tanzania, but many smaller producers continue to use non-grain, often informally procured feed inputs (OECD and FAO, 2022). Overall in SA, the net effect results in feed use growing at a marginally faster rate than poultry meat production.

However, the pattern of meat consumption has changed significantly in Africa over the last 20 years, and this trend will continue for a foreseeable future. Beef and mutton used to be the most popular meats, but these have been replaced recently by chicken meat. The daily per capita poultry meat consumption in Africa was estimated in 2020 at 17.31 g, compared with 13.02 g for beef meat, 3.81 g for mutton meat, 2.73 g for goat meat and 0.67 g for camel meat (author's calculations from FAOSTAT (2024)). This change in meat consumption pattern has been driven in part by the taste and also due to poverty as consumers have looked to the cheaper sources of protein.

Prospects for poultry value chains

If science, innovation and technologies are to contribute to the improvement of PVCs, the human capital development and technology transfer of its wide range of actors playing respective roles should be considered (Nkukwana, 2018; Tabler et al., 2021; Guèye, 2022) (**Figure 18**). Development strategies for sustainable PVCs should be based on poultry science, education and training, research, extension, farmers' organization, financial and advisory services. Focus should also be on strengthening collaboration between the private and public sectors, and enhancing innovative ways to articulate concerns from producers and consumers to policy makers that help remove barriers to technological adoption.

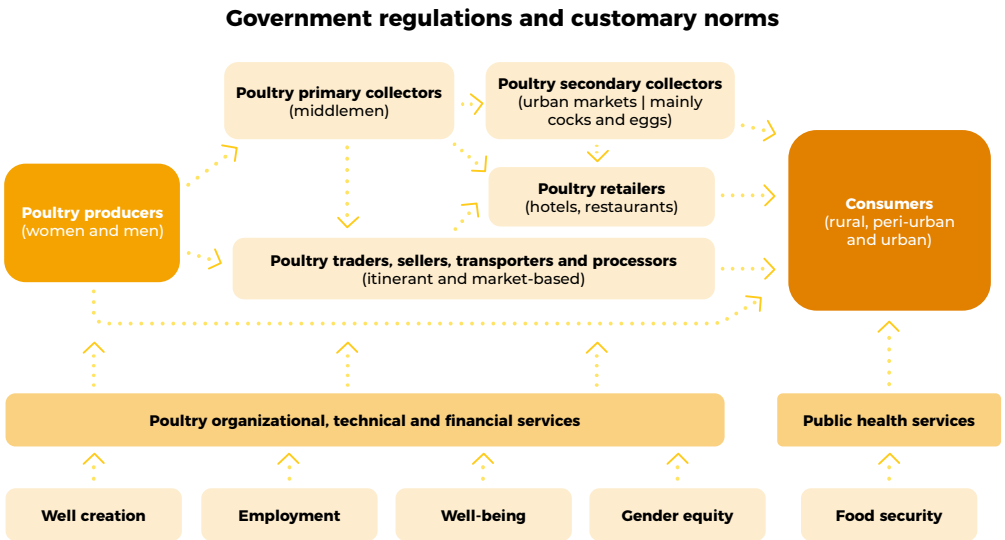


Figure 18. *Typical simplified poultry value chains.*

Furthermore, Mazunga et al. (2023) reported that the use of the emerging technology, Internet of Things (IoT), as an effective automated poultry monitoring system, can contribute towards the achievement of United Nations Sustainable Development Goals (UNSDGs) that include "ending poverty, having zero hunger, good health and well-being, industry innovation and infrastructure".

Impetus on development of PVCs can be facilitated by public private partnership. This would ensure sustainability of poultry enterprises, provision of capital subsidy by government in form of periodic grants to poultry farmers and core infrastructures (Guèye, 2022; Tabler et al., 2021). Governments should regulate the externalities of PVCs' intensification and provide financial assistance to PVCs actors in form of soft loans. It should also give them tax concession. Poultry waste management system under poultry intensive systems should be properly designed, built and maintained in order to protect both surface and underground water quality.

One of the greatest significant inputs for intensively managed poultry production is feed. Feed efficiency is affected by many factors, such as the quality of the feed, the animal performances, genetics and health of the animals. Therefore, the system of the future will need to apply greater focus on resource sufficiency and efficiency (Mengesha, 2012b; Herrero et al., 2014; Kusi et al., 2015; Juma, 2016; FAO, 2018; Nkukwana, 2018). Furthermore, between 1990 and 2000, feed conversion rates for poultry had improved by 30 to 50 percent, in part through breeding and in part through the addition of enzymes to feeds. Still, in monogastrics such as poultry, only 25 to 35 percent of the nutrients consumed had been retained in the final products.
Feed as a constraint of poultry production is resolved by increasing the acreage in maize and soybean grain production (Smith and Nouala, 2015; FAO, 2018). Farrelly (1996) suggested also that private investment from overseas might help to enable poultry production in Nigeria. Big farms of mono-gastric animals, such as pig and poultry farms, will help to increase the number of animals as the demand grows because of economies of scale (Herrero et al., 2014). In Kenya, Kabuage (2010) suggested the policymakers to further focus on strategies for commercialisation of traditional poultry production.

Positive drivers to boost PVCs in Africa include population growth, increased per capita incomes and growing access to new communication (OECD and FAO, 2022). Success stories of genetic improvements in the PVCs in some African countries through introduction of exotic breeds and/or through crossbreeding can also be considered as an opportunity for experience sharing among the SSA countries (Smith and Nouala, 2015; Moraa Kennedy et al., 2022). In Africa, chicken meat and eggs are inexpensive sources of protein foods, and this could be considered as additionally a good opportunity (Heise et al., 2015).

Governmental and non-govern-

mental organisations of SSA are increasingly realising the potential of improved poultry production to reduce poverty (Smith and Nouala, 2015). Opportunities for indigenous poultry production include increased demand for organic foods, white meat and emerging niche markets' evolvement for quality organic poultry products (Branckaert and Guèye, 2000; Guèye, 2022; Besbes et al., 2012; Kabuage, 2010; IFAD, 2020; Jim, 2021; Alders et al., 2022).

CONCLUSIONS

Apart from the current Africa's consumption of poultry, mainly chicken products, which is outstripping all other foods of livestock products, consumption of poultry meat and eggs has also the lead in the forthcoming projection rates (99% since 2004). Therefore, the PVCs' actors need to respond to the progressively growing demands of poultry meat and eggs, and they should also enhance their contributions to both reversing the malnutrition and thereby improving the societal health status. Consequently, well-informed policies need to be also designed in a manner to reconcile variations of poultry production scenarios, mainly the productivity, sustainability and societal values. Since feed is one of the problems (supply, quality and price) to boosting poultry production, a sound policy that could help to ensure the supply of competitively priced domestic or imported maize, other cereal grains and soybeans is the key to the future growth of PVCs in Africa.

The resolution of chicken production crisis in Africa, in general, lies on upgrading and qualitatively transforming the agricultural systems. Imports of poultry products into Africa have been discouraging the local PVCs' actors, and therefore, it might be better to invite international breeders to have branches in respective African countries.

Governmental interventions might also be required, with regard to solving the controversial issues between product safety and consumers' concerns. This is mainly for the local products. Focusing on strategies for commercialisation of poultry production might be also another option to improve poultry production in Africa. In addition to preventing poultry diseases, it is true that without producing or supplying quality and sufficient amounts of poultry feed ingredients, poultry production would hardly be improved and thereby unable to improve the per capita consumption of poultry meat and eggs in Africa. Furthermore, it is recommended to kindly invite those internationally known and well-recognized chicken breeding companies, such as LOHMANN BREEDERS GmbH, to open branches in potentially promising African countries.

SUMMARY

The aim of this paper is to deliver the current situation and trends of poultry value chains (PVCs) using the most recent and accurate statistical data in Africa. It discusses the socio-economic contribution of PVCs to food security and wealth creation while addressing the challenges facing the PVCs in uncertain socio-economic environments. It explores the opportunities and prospects for PVCs under promising improvement in human capital development and innovative technology transfer realities. With the poultry-derived foods being critically important for a healthy and productive society, poultry value chains (PVCs) have been making substantial progress in Africa since 1961. Although poultry production is one of the fastest-growing agricultural sectors in Africa with an average 10-year growth rate of 40.9% in Africa compared with 36.2% worldwide from 1961 to 2021, such a growth is much more noticeable in Northern (53.1%) and Southern (52.9%) African countries. These high poultry stocks are the benefits of decades of poultry research and development investments in day-old chicks from high-performance hybrid stocks, balanced feeds, drugs, vaccines and the presence of consumers who can afford to buy commercial poultry products. Poultry meat is the largest source of animal protein in the human diet, while egg consumption is higher than that of mutton, goat, pork, and camel meats. In Africa, data show that future consumption projection rates have been highest (99% since 2004) for white-meat and eggs. Regardless of country's economic level, PVCs have taken the lead in the production of animal products. In 2022, chickens accounted for 97.0% of the Africa's total poultry numbers and contributed 83.0% and 99.8% of poultry meat and egg production, respectively. The PVCs are expected to continue to grow as demands for poultry meat and eggs are driven by human population growth, increased purchasing power, higher urbanization rate and enhanced communication. Nonetheless, due to low productivity, the growing demand for poultry products has not been accompanied by an equivalent growth in local production. The PVCs in Africa are also facing unprecedented challenges, both in rural and urban areas, poultry being a major asset and key to poverty alleviation, income generation, employment, and market participation. The aims of this paper are to highlight the trends, constraints and opportunities to the PVC actors in Africa.

Keywords: *Africa, food security, poultry, prospects, trends, value chain, wealth creation.*

Disclosure statement
No potential conflict of interest was reported by the author.

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