



Effective Altruism



**POLICY AND LEGISLATIVE FRAMEWORK
ANALYSIS OF POULTRY BATTERY CAGE
FARMING IN UGANDA**



February 2022

A publication of Africa Network for Animal Welfare (ANAW)

TABLE OF CONTENTS

TABLE OF CONTENTS.....	i
LIST OF ACRONYMS	iii
1.0 Introduction	1
1.1 Poultry Production.....	2
1.2 Global number of Chickens.....	2
1.3 Top Chicken Meat Producers in the World.....	1
1.4 Poultry Production in Uganda	3
2.0 Poultry Production Systems	4
2.1 Global Perspective.....	6
2.2 Uganda Perspective	7
3.0 Laws, Policies, Guidelines and Standards for Poultry Farming.....	8
3.1 Policies and Laws in United States	9
3.2 Policies and Laws in Australia	9
3.3 Policies and Laws in Uganda	10
3.3.1 Animal Welfare Act.....	11
3.3.2 Animals (Prevention of Cruelty) Act 2000 (Cap. 220, Uganda)	11
3.3.3 Agricultural and Livestock Development Fund Act.....	13
4.0 Conclusions	13
5.0 Recommendations	14
5.1 Farmer Sensitization.....	14
5.2 Provision of Advisory Services.....	14
5.3 Adoption of Policy Frameworks	14
REFERENCES	16

LIST OF ACRONYMS

AU	African Union
BAM	Biosecurity and Agriculture Management
DPIRD	Department of Primary Industries and Regional Development, Western Australia
EPIA	Egg Products Inspection Act
EU	European Union
FAO	Food Agriculture Organization
FSIS	Food Safety and Inspection Service
MSs	Member States
NAADS	National Agriculture Advisory Services
NALPIP	National Livestock Productivity Improvement Program
NARO	National Agricultural research organization
ND	Newcastle disease
NGO	Non-Governmental Organization
OIE	Organisation for Animal Health
OUA-IBAR	Organization of African Unity – Interafrican Bureau for Animal Resources
PEAP	Poverty Eradication Action Plan
PMA	Plan for the Modernization of Agriculture
UBOS	Uganda Bureau of Statistics
UEP	United Egg Producers
UK	United Kingdom
US	United States
WTO	World Trade Organization

ACKNOWLEDGEMENT

It is a genuine pleasure to express a deep sense of gratitude to the Centre for Effective Altruism for their financial support in ensuring the successful execution of this study.

We appreciate Dr Paul Ssuna for his immense contribution towards the development of this report.

Special thanks to the Project Implementation Team Josiah Ojwang, Dr Dennis Bahati, Sebastian Mwanza.

1.0 Introduction

This review paper presents the findings about the prevalence and status of poultry battery caging as a livestock management system in Uganda.

1.1 Poultry Production

In animal husbandry, poultry refers to birds raised domestically or commercially for eggs, meat or feathers. Globally, poultry represents the largest domestic animal stock. Of all livestock sectors, the poultry sector is the most flexible and fastest growing sector and is often driven by very strong growing demand. Drivers, such as the income level growth, urbanization and population growth have greatly contributed to the increase in demand for poultry products in different parts of the world (FAO, 2020). In 2020, the Poultry Global Market Report (2021) showed that the market value of poultry was \$ 310.7 billion, and it was expected to grow to \$ 322.55 billion, a 3.8% annual compound growth rate in 2021. The poultry products' market is projected to increase to \$ 422.97 billion by 2025, with a 7% compound annual growth rate (Poultry Global Market Report, 2021). In Africa, the demand for poultry products contributes 50% of the total consumption of meat in the continent (Vernooij, Masaki & Meijer-Willems, 2018) providing food with quality nutrients that improves human nutrition, manure for crop production and vegetable gardens and generates income for farmers (Farrell, 2013).

1.2 Global number of Chickens

Egg laying hens and broilers are the major categories of chickens farmed worldwide. In 2019, poultry represented the largest domestic animal stock and the number of chickens in the world was 25.9 billion, up from 14.38 billion chickens in 2000 (Shahbandeh, 2021). Specifically, FAO (2020) revealed that countries from Asia have the biggest share of the total chicken presence with 15.8 billion, followed by the Americas with 5.8 billion. While the presence of chicken in Europe is approximately 2 billion (FAO, 2020).

In 2021, the top producer of chicken meat in the world was the US with an estimated production of about 20.4 million metric tons of broiler meat (Shahbandeh, 2021), which was about 17% of the global output (FAO, 2021). Brazil is the runner up with 14 million metric tons of chicken meat produced, followed by European Union countries (12.4 million metric tons), China (12 million metric tons), India (5 million metric tons), Russia (4.8 million metric tons), Mexico (3.6

million metric tons), Thailand (3.2 million metric tons), Turkey (2.3 million metric tons) and Argentina (2 million metric tons) (Shahbandeh, 2021).

Africa presently hosts over 15% of all the world's poultry population, and it is expected to increase to over 25% by 2025 (Vernooij, Masaki & Meijer-Willems, 2018). Specifically, Africa accounts for 5% of the global egg production and 5% of poultry meat worldwide. South Africa is the leading African country with 25% of all the continent's poultry meat while Nigeria is the leading in producing most eggs (Vernooij, Masaki & Meijer-Willems, 2018).

1.3 Poultry Production in Uganda

In Uganda, the poultry population grew by 9.6% while egg production predominantly grew by 9%, between 2013 – 2017 (UBOS, 2018). There were about 47.6 million birds (that is, Exotic – 5.85 million birds and Indigenous – 41.7 million birds) in the country in 2017 (UBOS, 2018).

Table 1: Common Chicken Breeds in Uganda

No.	Type	Breed	Local Synonyms
1	Chicken - Local	Ugandan red	Nganda, Nkore, Nsoga and Nkooki
		Uganda brown	Nkore, Nsoga and Nganda
		Ugandan short legged	Nyoro
		Uganda black and white	Nsoga, Nganda and Nkore
		Teso chicken	
		Ugandan white	
		Nsesere	
2	Chicken – Duo purpose (improved breeds)	Kroilers	
		Sasso	
		Rainbow	
3	Chicken – Exotic Broiler	Hubbard	
		Cobb 500	
		Ross	
	Chicken – Exotic Layer	Bovan brown	
		Hubbard	
		Issex	
		Issa brown	
		Shaver	

Source: Fact sheet on animal genetic resources of Uganda (NAGRC & DB, 2002)

1.4.1 Number of people depending on chicken and their contributions to household income

Majority of the households in Uganda regularly keep chicken for their livelihoods. UBOS (2015) asserted that the poultry sector contributes over 65 metric tonnes of eggs and meat to a big number of Ugandans annually. On this note, over 40% or 17 million people of Uganda’s population produce some chicken meat in their households (UBOS, 2015). This figure excludes the people that are employed along the poultry value chain, including the feed suppliers, para-veterinarians, veterinarians and traders. Over 14 million people in the country raise chickens in

free-range system and produce chicken meat, with 0.6 million (4%) and 2.2 million people (16%) keeping chickens in intensive and semi-intensive systems respectively (UBOS, 2015) as shown in table 2.

Averagely, chickens contribute over 8% to the households' income in the different systems. Particularly, 7%, 11% and 18% in free range systems, semi-intensive and intensive respectively (Nizeyimana & Felis, 2018). Intensive systems are the greatest productive, with an average income per bird of UGX 53,540 vs 25,093 and UGX 7,588 in free range and semi-intensive systems respectively (Nizeyimana & Felis, 2018) as shown in table 2.

Table 2: Number of people raising chicken and their contribution to household income

Type of system	Number of people	Net income per chicken (UGX)
Free-range system	14,000,000	25,093
Intensive system	573, 241	53, 540
Semi-intensive system	2,238,873	7, 588
Total	16,812,114	22, 907

Source: Nizeyimana and Felis (2018).

1.4.2 Consumption of chicken products

In Uganda, chickens generate a steady flow food for households, mainly through the provision of meat and eggs. Particularly, households in semi-intensive and free-range productions systems consume more than 80% of the chicken meat and eggs they produce (Nizeyimana & Felis, 2018) While households in intensive systems are mostly considered for their commercial alignment, sell around 85% of their chicken meat and egg production (Nizeyimana & Felis, 2018) as shown in table 3.

Table 3: Household sales and consumption level

Type of system	%age of sold chicken products	%age of consumed chicken products
Intensive	85%	15%
Semi-intensive	16%	84%

Free-range	17%	83%
------------	-----	-----

Source: Nizeyimana and Felis (2018).

2.0 Poultry Production Systems

2.1 Global Perspective

Different countries use specific poultry production systems including the intensive and alternative production systems. Most of the poultry meat and eggs in the world are produced intensively (Hafez, 2020). For example, over 95% of all eggs are produced in battery or conventional cage systems in the United States (Prafulla, 2015). These cage systems usually hold 6-10 laying hens, and always have automated watering, feeding, systems that collect eggs. In battery cage systems, each laying hen is usually provided 67 square inches of space on the floor (Mottet, 2017). Producers of eggs started in the 1950s to adopt battery cage systems because they are more economically efficient, provided cleaner eggs and reduced diseases compared with traditional farmyard production methods. However, battery cage systems have not been supported due to poor welfare given to laying hens, especially in Europe (Prafulla, 2015).

Among the alternatives to the intensive method of poultry farming is the free-range farming, which allows birds to roam freely for a given period during the day, though they are frequently kept indoors if the weather is bad or confined in sheds at night to guard them from predators (David et al., 2015). Free-range systems are used for producing the other 5% of all eggs. With free-range method, chicken benefit in making exercises outdoors, scratching, and pecking among other benefits.

In Africa, there are two major poultry production systems: village poultry and commercial poultry (Tabler, 2021). Village (commonly known as backyard, rural or extensive) poultry is usually on a smaller scale, and utilizes breeds of birds whose productivity is low and are indigenous. While commercial poultry is usually on a medium to a large scale and utilizes improved exotic and genetic breeds that are normally raised intensively in various facilities that provide for the protection, health, feeding and welfare of chickens on a big scale with quite high returns (Tabler, 2021). In addition, an intermediate production system that is on a scale somewhere between the village and commercial level is developing over time (Tabler, 2021).

The highest percentage of chickens kept in Africa are particularly raised in Village poultry system (Kitalyi, 1998), which Abioja and Abiona (2020) asserted that it is a much older production system and more widespread than the new commercial poultry production system to Africa. Sherwin, Richards & Nicol (2010) asserted that both free-range and intensive farming have concerns of animal welfare, especially vent and feather pecking, prompting most farmers to trim beaks as a preventative measure. But most of the countries, including Uganda use battery cage system as their most poultry production system (ASL2050, 2017).

From a poultry perspective, animal welfare requires that all the basic needs of chickens are met on a daily basis (Browning, 2020). The Model Code of Practice for the Welfare of Animals, Domestic Poultry 2001 (Pisc, 2002) paraphrased these needs as:

- i. Chickens can see one another
- ii. Housing or shedding which protects chickens from bad weather so that it does not harm them
- iii. Prevention of injuries, disease and vice.
- iv. Ready access to Water and food
- v. Freedom to stretch, stand, move, turn around, lie and sit down

2.2 Uganda Perspective

The poultry value chain in Uganda is gradually transforming from a largely backyard subsistence system to an intensive commercial system (Sabiiti & Katongole, 2016). There are three production systems in the country including the free-range, semi-intensive and intensive systems. In the free-range system, farmers keep flocks of dozens of indigenous chickens that are usually left to wander around and search for food. Chickens produce eggs and meat, and live birds are usually valued very well in the market because majority of the consumers prefer their organoleptic features over the features of exotic breeds. The free-range system is present across the whole country, both in urban and rural areas, mainly pervasive in the West Nile and Southwest sub-regions (ASL2050, 2017).

Farmers in semi-intensive system keep flocks of chickens mainly for commercial purposes, producing either eggs or meat for the available market. Chickens are fed within compounds and are kept in permanent structures of deep litter systems. These semi-intensive farms are mostly

located in peri-urban areas, and are predominant in Central 2 and the East Central sub-regions (ASL2050, 2017).

In the intensive production system, farmers usually keep thousands of exotic chickens of one species, and produce either eggs or meat for the market. Majority of the farms with intensive system are mostly found in peri-urban areas, and dominant in the East Central, Central 1 and 2 sub-regions (ASL2050, 2017).

Among the different forms of housing structures for chickens used in Uganda is a battery cage system that is a main form of housing for the laying hens. Namugabi (2019) noted that chickens are confined within a house and are fed and after brooding they are usually put within the cage that takes about seven (7) birds. Namugabi (2019) also asserted that battery cage system has been highly embraced in poultry farming and an inexpensive margin of farmers have benefited from the system since it is effective and efficient and egg production is met.

There are various programs that are being implemented across the country in support of the poultry industry. For instance, Namugabi (2019) explained that the National Livestock Productivity Improvement Program (NALPIP) is funded by the African Development Bank to provide vaccines for the control of diseases.

3.0 Laws, Standards, Guidelines and Policies for Poultry Farming

Worldwide, legislations regulating the poultry industry cover a wide array of issues ranging from food safety and health, control of diseases, the environment, to agricultural chemicals, veterinary chemicals, poultry manure and animal welfare. There are numerous bodies or institutions worldwide that promote the welfare of poultry, regulate poultry production and sale. For instance, the World Organization for Animal Health (OIE) is the intergovernmental organization that was founded in 1924 and is in charge of improving animal welfare and health worldwide. The African Union – Interafrican Bureau for Animal Resources (AU-IBAR) specializes in supporting and coordinating the sustainable growth and utilization of poultry resources to improve nutrition, food security and enhance the prosperity and wellbeing of the people in the African Union (AU) member states. FAO (2012) asserted that the World Trade Organization (WTO) ensures a smooth and free flow of trade between nations. Egg or poultry meat

production is covered by a number of laws and regulations in different countries. Thus, all poultry and egg producers, whether backyard or commercial, are required to comply with the laws and regulations that are relevant to their business irrespective of the category of production system (organic, free range, barn, cage). The following are example policies used in different countries:

3.1 Policies and Laws in United States

In the United States, the Egg Products Inspection Act of 1970 (EPIA; 21 U.S.C. and 1031 et seq) were introduced in the Senate and House to regulate the safety of shell eggs and egg products. The EPIA prohibits eggs that are restricted, such as dirty, leaky or cracked eggs from entering the shell egg supply for human consumption. Greene & Cowan (2014) also asserted that shell eggs are required to be refrigerated at a temperature that is not more than 45 degrees Fahrenheit and use labels that indicate refrigeration is obligatory for shell eggs. It also requires that egg products be pasteurized before sale for human consumption and should include a label with a legend for inspection and the number of the plant from where they were processed. Greene & Cowan (2014) further asserted that the processing of egg products is inspected by the Food Safety and Inspection Service (FSIS) and ensures that they are pasteurized and produced under sanitary conditions. In 2013, bills were tabled in the 113th Congress by Schrader (2012) to amend the Egg Products Inspection Act of 1970 and add production requirements as well as cage size for shell eggs. The bills intended to include labeling requirements, treatment and air quality standards for egg-laying hens and also to establish uniform cage size requirements for table-egg-laying hens across the nation (Schrader, 2012).

3.2 Policies and Laws in Australia

In Australia, the Department of Primary Industries and Regional Development, Western Australia (DPIRD) is responsible for livestock biosecurity (disease prevention, disease surveillance and eradication or control), animal welfare, chemical residues and soil and land conservation. DPIRD administers Acts and regulations that are pertinent to the poultry producers (DPIRD, 2019). For example, commercial producers of eggs must comply with egg labelling guidelines and the Food Act 2008 and all other relevant legislations such as Biosecurity and Agriculture Management (BAM) Act and Regulations, Exotic Diseases of Animals Act 1993,

Animal Welfare Act 2002, and Veterinary Chemical Control and Animal Feeding Stuffs Act 1976 (DPIRD, 2019). Producers also have a legal obligation to report suspicion or the presence of reportable diseases of poultry, particularly avian influenza and Newcastle disease (DPIRD, 2019).

3.3 Policies and Laws in UK

The poultry industry in the UK is among the most regulated industries and is generally subject to the hygiene of the public and animal welfare codes that govern the way birds are fed, housed and transported. For instance, a statutory welfare code or section 14 of the Animal Welfare Act 2006 that was issued under section 3 of the Agriculture (Miscellaneous Provisions) Act 1968 (1) helps all people that care for laying pullets and hens to practice good standards of stockmanship in order to safeguard the welfare of birds. The welfare of laying pullets and hens is considered within a framework called the ‘Five Freedoms’, which form the principles that guide the assessment of welfare within any systems, in conjunction with the actions that are necessary to protect the welfare within the limitations of an efficient poultry industry.

3.4 Policies and Laws in the United Republic of Tanzania

In Tanzania, the poultry sector is guided by the Animal Welfare Act among others. This law emphasizes the reduction of animal’s suffering by enabling preventive action to be taken before suffering occurs (FAO, 2009). The duty of people that are responsible for companion and domestic animals, necessitating them to reasonably ensure their animals’ welfare. For instance, the battery cage system in poultry is against the animal welfare act since birds are kept in spaces that are small, which prevents hens from having enough physical and psychological space for exercises, resulting in a higher incidence of metabolic disorders, lack of nesting opportunities resulting in severe frustration for many birds each time an egg is laid, lack of dust bathing opportunities which, although not a severe disadvantage, should still be charged to cages, lack of other behavioral chances. These in turn seem to be against animal welfare Act (FAO, 2009).

3.5 Policies and Laws in Uganda

At present, the poultry sector in Uganda is regulated by a legislative framework and livestock policies within the agriculture sector. Although this sector does not have a

selected comprehensive policy, it is guided by the Plan for the Modernization of Agriculture (PMA), which may be a framework developed under the Poverty Eradication Action Plan (PEAP) to rework farming into commercialized agriculture. In terms of poultry farming, the government of Uganda has been concerned and in reaction several policies, laws among others have been drafted to support poultry farming in Uganda for agricultural sector to boom and these may include;

3.5.1 The National Policy for the Delivery of Veterinary Services

The 2001 National Policy for the Delivery of Veterinary Services also ensures that the delivery of veterinary services remain inclusive such that rural or remote areas are also served, efficient and cost-effective, clearly delineated for providing services to the public and of high quality (Tatwangire, 2014). This enables the country in effectively controlling all notifiable diseases and minimizing the losses occurring from the outbreaks. Savimaxx Limited (2012) explained that the policy also set the responsibility for inspection, setting standards, registration, licensing and monitoring of diagnostic laboratories with MAAIF.

3.5.2 The National Animal Feeds policy

This policy was implemented in 2005 by MAAIF and targets to realize a vision of an improved animal feeds industry that greatly contributes to better animal production and productivity, thus improving the welfare of the citizens and the economy of the country. It targets the private sector-led increase in the availability of lower production costs, high-quality animal feeds and capacity development for both the public and private sector actors by providing better access to raw materials, research and finance (Government of Uganda (GOU), 2018). The policy provides a framework to regulate and manage the animal feeds industry. For example, in 2019, an Animal Feeds Bill was passed to regulate importers of animal feeds to make sure that they meet the standards of good and high quality (Adam, 2019).

3.5.3 Animals (Prevention of Cruelty) Act 2000 (Cap. 220, Uganda).

There is need to examine the prevention of cruelty Act, to ascertain the extent to which in practice it provides proper protection to animals. It is observed that there are many limitations in the protection of animals by this act. The prevention of cruelty Act was the first national law enacted in Britain against cruelty to animals, even though its intention was to protect the property

of the owner rather than the welfare of an animal. Further consolidation and modifications of the law took precedence and were marked by the description of cruelty as “causing unnecessary suffering”. The qualification ‘unnecessary’ eliminated the comprehensiveness of the law to protect animals as it implied that animals could be subjected to suffering that was not legally regarded as cruelty.

Even though the ‘prevention of cruelty act’ has been useful in giving protection to animals against gratuitous acts of cruelty in the traditional sense, its limitations have become more evident with modern human-animal interaction that causes animal suffering but not motivated by animal cruelty (Ssebaana, 2006).. Several African countries, such as, Kenya, have since revised the prevention of cruelty to animal to make it broader and also include the protection of animals used in experiments, however, the qualification of suffering as ‘unnecessary suffering’ and definition of the offence of cruelty has not changed. Furthermore, this legislation mainly benefits companion animals with no significant protection for farm animals, specifically poultry. The wider community perceives this legislation as protective to animals whereas in reality it appears that animal welfare considerations are either disregarded or compromised when human interests and economics are involved. It is the role for education to create awareness in the community of both the contents of and limitations in animal protection legislation.

This study further notes that the Animals (Prevention of Cruelty) Act (Cap. 220, Uganda) has not been fully implemented on poultry as a specific category of animals in Uganda. It is mainly implemented on cattle (Ssebaana, 2006), for example, the Uganda Local Governments (Kampala City Council) Ordinance shows that a person should not keep a cattle on any premises without a valid permit issued by the Council in the prescribed form or a valid urban agricultural permit issued under paragraph 4 of the Local Governments (Kampala City Council) (Urban Agriculture) Ordinance. In this regard, most of the poultry farmers have not applied for any permit to keep poultry in their homes. It is also realized that there are no chicken slaughter houses constructed in the country for ‘public’ use. Thus, considering this illegal freedom granted to poultry farmers, most chicken are not being kept and slaughtered in accordance with the Public Health Act (Ssebaana, 2006) and people often use them as experiments in various traditional shrines for different personal or cultural reasons. It was also observed that most of the times chicken are not always transported in a good defined way. They suffer being transported in vehicle boots where

there is no quality air. This study recommends that the Animals (Prevention of Cruelty) Act (Cap. 220, Uganda) should protect the freedom of poultry.

3.5.4 Agricultural and Livestock Development Act

This Act establishes the Agricultural and Livestock Development Fund that promotes the livestock industry in Uganda by empowering farmers with loans or guaranteeing credits given to farmers. It also makes recommendations to authorities that could be relevant to the functions of the fund, assist farmers and make sure that their activities are administered on sound agricultural practices, and give advice to farmers in respect of financial management.

Studies noted that budgetary allocation to agricultural and livestock development Act is often low. This finding is supported by a study of the Economic Policy and Research center (2008), which reveals that allocations to the fund from the recurrent expenditure varied from 0.507 to 0.586 billion shillings (\$2,500,000 to \$300,000) between 2005 to 2008. Still the funds that are allocated seem to be little compared to the number of those willing to access the funds. In particular the funds are insufficient and in most cases, inaccessible to poultry farmers, which limits their ability to improve production standards and maintain good welfare of the chickens.

3.5.5 The Animal Diseases Act

This Act provides measures that should be taken by holders of the animals and public bodies to control diseases that could be affecting the animals such as poultry, camels, ruminating animals, dogs and cats and any other animal and disease declared by the Minister for inclusion in the term “animal” (Animal Diseases (Amendment) Act, 2006 (Act 26 of 2006).

4.0 Conclusions

There is need for collaboration, embracing private partnerships between government and other stakeholders for example, NGOs for veterinary extension services. These multiple efforts will collectively improve dispensation of animal welfare and health services in the country.

On the same note, shifting responsibilities from the central government to districts has brought challenges much as it has reduced both the duplication of roles across different ministries and workloads at the central government. For instance, decentralizing the

provision of veterinary service has greatly reduced central government's supervision and regulation, which are critical components of livestock health and welfare control and therefore the implementation of veterinary services. Therefore, government's role in supervision and regulation of animal agriculture reinstated as well as reinforcing the implementation abilities at local governments.

5.0 Recommendations

This study has provided the following recommendations:

5.1 Farmer Sensitization

Poultry farmers should be sensitized about the availability of fund opportunities, so that money can be applied for and utilized by farmers for poultry development and there should be adoption of stringent accountability mechanisms to fight the corruption challenge.

Farmers also need to be informed about the welfare issues that mostly affect the poultry industry so that they can employ better ways of solving them. Improved poultry welfare guarantees poultry production advantages such as good-sized eggs and chickens for meat, which yield more profits for the farmers.

5.2 Provision of Advisory Services

Provision of advisory services to farmers in the form of new agricultural technologies along with easy access to farm inputs will be effective in providing for the welfare needs of poultry. Farmers need to be fully equipped with all the needed information, rationale of national agricultural advisory/improvement programs, and what they expects.

5.3 Adoption/setting of minimum standards for welfare of poultry

This research paper recommends the need to set minimum standards for poultry welfare. For example, one of the most vital decisions made by the European Union (EU) has been to eliminate battery cages for hens by the year 2036. The EU sets standards for animal welfare, but any of the Member States is allowed to exceed these standards if they so desire. Sweden prohibited beak trimming of birds and banned the utilization of battery cages for laying hens in 1999. Finland banned all battery cages in 2005, seven years before what the EU Laying Hen

Directive required. Switzerland, although an EU member, has its own Animal Welfare Act that prohibited the use of battery cage systems beginning in 1991. It is also strongly desired and recommended that minimum standards of welfare are set and implemented under the legislative structure of the country.

5.4 Safety of poultry products

The EU emphasizes a strong connection between food safety and animal welfare. The European Commission research studies show that an animal that is treated well and allowed to express its natural behaviors is healthier than the one that is badly treated. Hence, animals that are overcrowded or stressed usually face a challenge of having their immune systems weakened, which can also make them more prone to diseases, thus increasing food safety dangers to humans. With the shared goals of food safety, animal welfare, environmental protection, and therefore the preservation of the landscape in mind, the agricultural sector in Uganda should issue or setup a substantial body of legislation dealing with safety of agriculture and animal welfare.

5.5 Five freedoms and recognition of animal sentience

In comparison to the just about non-existent protection offered to agricultural animals within the US, many livestock in Europe and therefore the UK are afforded significant legal protections. Numerous animal welfare laws in Europe are grounded on the Five Freedoms principle. The five freedoms necessitate animals to have their freedom from thirst and hunger, freedom from discomfort, freedom from injury, pain or diseases, freedom to exercise and freedom from fear. These five freedoms form the inspiration of the many sorts of animal legislation throughout the European Union (EU), the UK, and New Zealand, and in contrast to within the US, chickens are not categorically excluded from this legislative protection. Several countries have passed different laws that address chickens' welfare. In 1997, the Amsterdam treaty of EU documented that animal are capable of feeling pain and obliged that the welfare of the animal be considered when policies relating to agriculture, transport, and research is formulated or implemented. Since that time, the EU's agricultural policy has put much focus on increasing the quality instead of quantity. Traditional price mechanisms do not always leave important considerations like animal welfare to be properly recognized within the prices paid to producers. Therefore, these freedoms given to animals in the United States and England should be also

embraced in Uganda and benchmarked during revision of existing laws and/or enactment of new laws that protect animals.

REFERENCES

- Abioja, M. O., and J. A. Abiona. (2020). Impacts of climate change to poultry production in Africa: Adaptation options for broiler chickens. In: W. Leal Filho et al. (eds), African Handbook of Climate Change Adaptation. Springer Nature Switzerland.
- Adam, K.A.-M. (2019). Govt Introduces Legislation to Curb Substandard Animal Feeds. SoftPower. <https://www.softpower.ug/govt-introduces-legislation-to-curb-substandard-animal-feeds/> (accessed 7.7.20).
- Animal Diseases (Amendment) Act, 2006 (Act 26 of 2006).
- ASL2050. (2017). Uganda's Livestock Production Systems. FAO, Kampala, Uganda.
- ASL2050. (2017). Uganda's Livestock Production Systems. FAO, Kampala, Uganda.
- Australian egg industry report. (2021).
- Browning, H. (2020). *The natural behavior debate: Two conceptions of animal welfare*. Journal of Applied Animal Welfare Science, 23(3), 325-337.
- Code of Practice for the Welfare of Laying Hens and Pullets. (2018). https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/732227/code-of-practice-welfare-of-laying-hens-pullets.pdf
- David, B; et al. (2015). Air Quality in Alternative Housing Systems May Have an Impact on Laying Hen Welfare. Part I—Dust. *Animals*. 3 (5): 495–511.
- FAO, (2021). Animals (Prevention of Cruelty) Act (Cap. 220) 2000 (Uganda.). Laws of Uganda, pp. 3782-3789 (.pdf). Retrieved from <https://www.fao.org/faolex/results/details/en/c/LEX-FAOC041669>.
- Farrell, D. (2013). The role of poultry in human nutrition. *Poultry Development Review*. Rome: Food and Agriculture Organization, 2-9.

- Food and Agriculture Organization of the United Nations (FA). (2020). MEAT MARKET REVIEW, Emerging trends and outlook, December 2020
- GOU. (2018). Uganda One Health Strategic Plan 2018-2022. Ministry of Health, AIAFM. Kampala, Uganda: GOU. 65 MAAIF (Ministry of Agriculture, Animal Industries, and Fisheries). 2011. National Agriculture Policy. Uganda: Government of Uganda.
- Greene, J. L., & Cowan, T. (2014). *Table egg production and hen welfare: Agreement and legislative proposals*. Congressional Research Service.
- Kitalyi, A. J. (1998). *Village chicken production systems in rural Africa: Household food security and gender issues* (No. 142). Food & Agriculture Org.
- Namugabi, K. S. (2019). *Laying hen egg quality under battery cage system and deep litter poultry systems* (Doctoral dissertation, Makerere University).
- Nizeyimana G, and Felis A. (2018). Cattle, poultry and livelihoods spotlight: Uganda. Cattle and poultry sectors. Retrieved from <https://www.fao.org/3/i8716en/I8716EN.pdf>
- Pisc. (2002). *Model code of practice for the welfare of animals: domestic poultry* (Vol. 83). CSIRO PUBLISHING.FAO. (2012). *How can animal health systems support small-scale poultry producers and traders? Reflections on experience with HPAI*. Animal Production and Health Working Paper. No. 10. Rome. Retrieved from <https://www.fao.org/3/i2739e/i2739e.pdf>
- Poultry Global Market Report (2021). COVID 19 Impact and Recovery to 2030, January 2021
- Prafulla, R. (2015). Influence of housing systems on bone properties of laying hens. *ProQuest Dissertations and Theses*.
- Sabiiti, E.N. and Katongole, C.B. (2016). Role of peri-urban areas in the food systems of Uganda. In: *Balanced urban Development: Options and strategies for liveable cities*, Chapter 23: 387-392.
- Savimaxx Limited. (2012). Environmental and Social Management, Plan for the Avian and Human Influenza, Preparedness and Response Project (Final Report No.

- OPM/SRVCS/10 E11/00229), Environmental Impact Statement. Office of the Prime Minister, The Republic of Uganda, Kampala.
- Schrader, K. (2012). “Congressman Schrader Introduces Bill To Improve Housing For Egg-Laying Hens and Provide Stable Future For Egg Farmers,” press release, January 23, 2012, <http://schrader.house.gov/news/documentsingle.aspx?DocumentID=322820>.
- Shahbandeh, M. (2021). Global number of chickens 1990-2019. Number of chickens worldwide from 1990 to 2017 (in million animals). <https://www.statista.com/statistics/263962/number-of-chickens-worldwide-since-1990/>
- Shahbandeh, M. (2021). Global chicken meat production 2020 & 2021, by selected country. Statista.
- Shahbandeh, M. (2021). Top U.S. states based on number of chickens 2020. Statista
- Sherwin, C., Richards, G. and Nicol, C. (2010). A comparison of the welfare of layer hens in four housing systems used in the UK. *British Poultry Science*. 51(4): 488–499. [doi:10.1080/00071668.2010.502518](https://doi.org/10.1080/00071668.2010.502518). [PMID 20924842](https://pubmed.ncbi.nlm.nih.gov/20924842/). [S2CID 8968010](https://pubmed.ncbi.nlm.nih.gov/20924842/).
- Ssebaana, J.K. (2006). The Local Governments (Kampala City Council) (Livestock And Companion Animals) Ordinance, 2006. The Uganda Gazette No. 74 Volume XCVIX dated 29th December, 2006.
- Tabler, T. (2021). Poultry Production in Africa: Impacts of Climate Change. Mississippi State University. Retrieved from http://extension.msstate.edu/sites/default/files/publications/publications/P3706_web.pdf
- Tatwangire, A. (2014). Uganda smallholder pigs value chain development: Situation analysis and trends. International Livestock Research Institute (ILRI), Nairobi, Kenya.
- UBOS. (2015). Statistical abstract 2015
- Vernooij, A., Masaki, M. N., & Meijer-Willems, D. (2018). *Regionalisation in poultry developmen in Eastern Africa* (No. 1121). Wageningen Livestock Research.