

# Recent Dynamics of Poultry Production in Nepal: Food Security to Sustainable Production

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## ABSTRACT

*Poultry sector in Nepal is growing rapidly and contributes a significant share in the agricultural GDP. In this context, we present major push factors and challenges and interventions required to sustain the poultry farming in Nepal. Poultry sector has observed a huge growth in last two decades (2000-2020). During the same period, government policies and strategies including Bird flu control order 2064 were also formulated to develop the poultry sector. However, transient layoff was observed in the past decade (2010-2020) due to several crisis such as outbreaks of Bird flu, Earthquake, unofficial blockade from India and lately COVID-19 pandemic. Moreover, ineffective government relief packages in the crisis further exacerbated the situation. Nevertheless, some initiatives such as livestock Insurance were taken to mitigate potential losses. This review identifies reliance to foreign countries for feed ingredients, lack of integration of native breeds of poultry in mainstream market, fragile pricing of poultry products, and lack of stringent governmental rules/regulation/standards/acts to develop the poultry sector as major challenges for the poultry industry in Nepal. These gaps need to be fulfilled to develop the poultry sector further in Nepal.*

**Keywords:** Challenges of poultry industry, Growth, Nepal, Poultry

## INTRODUCTION

The poultry sector in Nepal has sustained through the ages and has shared a significant portion of the Nepalese economy. Nepalese indigenous breeds of poultry like Sakini and Ghantikhile have been associated with Nepalese households for past centuries and continue to the present day. Poultry sector alone contributes 4% (CBS, 2012) to gross domestic product and 8% to agriculture gross domestic product, with a total investment of over NRs 80 billion and direct employment for 1.5 million people (CBS, 2018). The introduction of improved breeds by American Citizen Aid in 1959 has been a benchmark for the poultry sector in Nepal (Mishra and Spradbrow, 1991). Almost half a century after the introduction of improved breeds, Nepalese poultry has grown exponentially with the integration of modern farming practices (FAO, 2014; Mishra & Spradbrow, 1991).

Nepal ranks 92<sup>nd</sup> in the worldwide egg production and 112<sup>th</sup> in poultry meat production (FAO, 2014) which justifies the fact that the poultry sector is an emerging agribusiness in Nepal and can be a source of the cheapest animal protein. Apparently, Nepalese poultry sector has seen vibrant growth, however, the backyard poultry sector still seems to have a significant share in total poultry

population. This article aims to present recent progress and changes in the poultry sector of Nepal and correlate these changes with the premise behind them in a rational way.

## MATERIALS AND METHODS

Literature review were conducted using various sources; scientific publications, newspaper, reports, governmental publications, non-governmental publications (FAO, Heifer International, and Hellen Kellen International), magazines, and proceedings from conferences and symposiums.

## RESULTS AND DISCUSSIONS



Fig 1: Word cloud with keywords used in article

**Stages of the poultry sector in Nepal:** The introduction of improved breeds from New Jersey, USA for cross-breeding purpose (200 cocks and 1500 hens) was the first step toward commercialization of poultry industry in Nepal. (Mishra & Spradbrow, 1991). Since then many policies, programs, and strategies have been formulated to uplift the poultry industry in Nepal. (FAO, 2014)

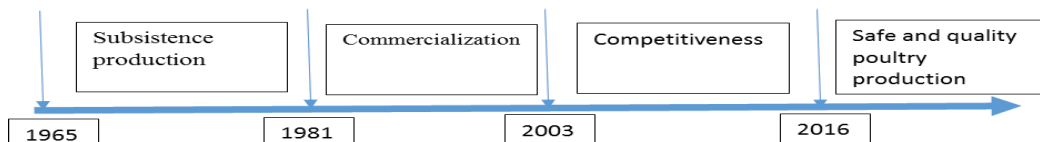


Fig 2: Chart showing Stages of Poultry Production in Nepal.(FAO, 2014; Rijal, 2018)

**Growth of commercial poultry farms over the period of 1974-2015 in Nepal**

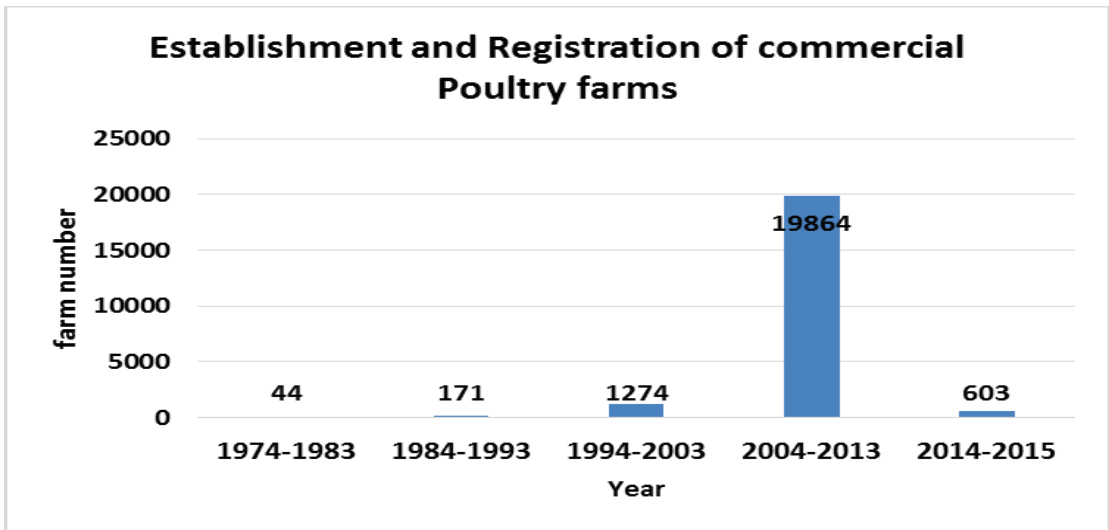


Fig 3: Graph showing establishment and registration of commercial poultry farms (CBS, 2018)

Nepal sees exponential growth of poultry sector in the decade 2004-2013 (CBS, 2018; FAO, 2014). The burgeoning poultry sector can be attributed to factors like political stability after the decade-long Maoist conflict (1993-2003), change of attitude among Nepalese consumers to consume poultry meat, increase in tourism, increased demand for poultry meat and eggs, and acceptance and integration of modern technology supported by the governmental and non-governmental sectors.

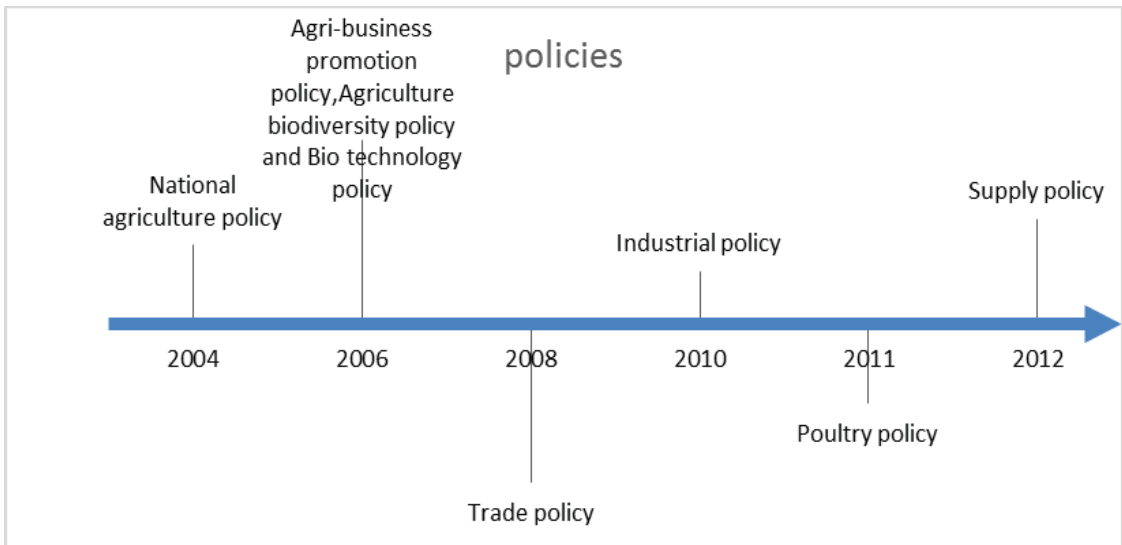


Fig. 4: Chart representation of the governmental policies over a period of time which are directly or indirectly related to the Poultry Sector.

## Governmental policies to uplift Nepalese poultry industry

The then HMG (His Majesty’s Government) of Nepal had formulated the different policies to uplift the poultry industry in Nepal. The pace of policy formulation and implementation has continued since then. The policies drafted and implemented had some impact on the poultry sector of Nepal but the achievements did not align with goals set.

## Major events hampering the poultry sector in a decades (2010-2020)

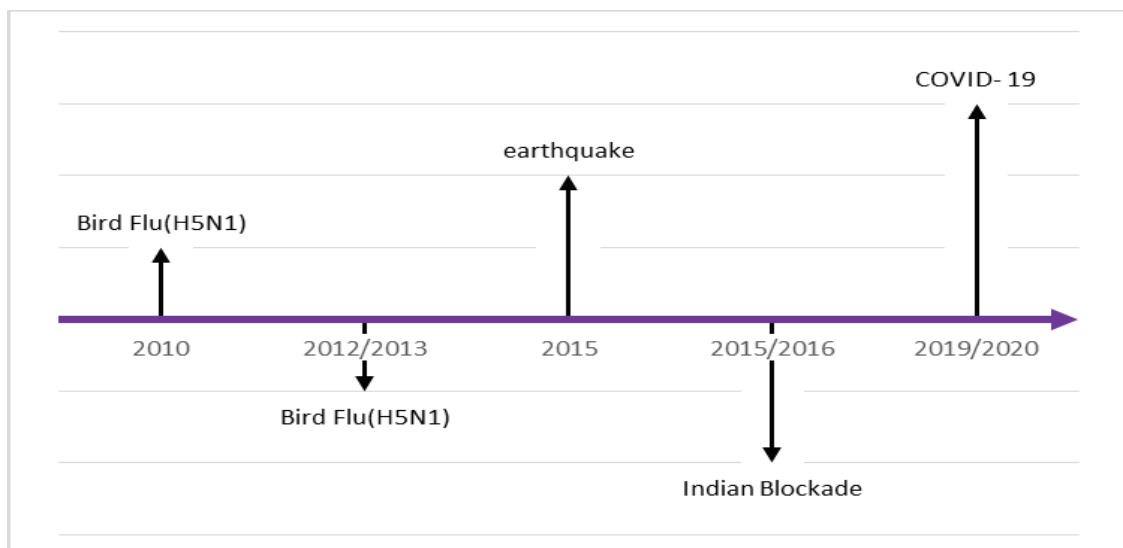


Fig 5: Major events hampering the Poultry sector in decade (2010-2020)

**Bird flu (H5N1):** The first case of bird flu appeared in 2009 in Jhapa district of Nepal (Karki et al., 2014) and has been impacting in the socioeconomy, especially in the microeconomy level (Karki, 2017). The highest number of outbreaks were recorded during 2012/2013 during which major poultry producing districts were affected. In these outbreaks, almost 1,84,776 birds were killed and 1.75 million chickens, 3.05 million eggs, 1, 72,181 kg of feed and 1, 55,550 kg of the meat were destroyed to prevent spread of virus. (“Farmers Receive Rs 1b for Compensation for Losses,” 2014). Low pathogenic avian influenza H9N2 has been endemic in Nepal since 2016 and has caused great loss in commercial meat and egg production.

**Earthquake:** Major earthquake hit Nepal on April 25, 2015. This had a devastating effect on Nepalese poultry sector like many other sectors. Earthquake killed hundreds of thousands of birds and tons of feeds were destroyed. In addition, 100 thousand chicks were destroyed daily from the hatcheries due to the lack of proper care and lack of employees in poultry farms and hatcheries (Mahato, 2015; “Nepal Needs ‘\$20 m’ to Help Quake-Hit Farmers,” 2015). Thousands of commercial broilers and layers farmers lost their poultry shed along with live birds in affected districts. Reestablishment of poultry farms got delayed (“Nepal Needs ‘\$20 m’ to Help Quake-Hit Farmers,” 2015) due to sluggish governmental actions and unofficial trade blockade from India which occurred after the earthquake. Lack of demand for poultry meat from restaurants, schools,

and banquets has led to transient decreases in poultry meat prices. After a month of post-earthquake, the supply of poultry was shrunken by 30%-40% due to which there was an increase in poultry meat (Rs 290/kg) and egg prices (Rs 280/crate) (“Chicken Prices Soar on Drop in Output,” 2015).

**Unofficial Trade Blockade from India:** Nepal claims to be self-reliant in poultry meat and eggs but the majority of poultry inputs (more than 60% of corn and 90% of soy cake) comes from India. The unofficial Indian Trade Blockade in December/January 2015/2016 badly affected the poultry industry. The lack of fuel, feeding raw materials (corn and soy cake) led to the destruction of one million newly hatched chicks and further delayed breeding of new chicks (Bashyal, 2015). During the blockade time (four and half months), some of the poultry farmers imported feed from Dhangadhi and Biratnagar border points informally paying four times higher than the actual cost (Yadav, 2016).

**COVID-19 Pandemic:** Amid of COVID-19 pandemic, Government of Nepal initiated a nationwide lockdown on 24th March 2020 which was partially loosened on 14<sup>th</sup> June 2020 except for schools, hotels, seminar halls, tourist spots, and banquets. The dearth of demand of chickens and eggs due closure of restaurants and school, public fear to consume animal source food, people busy buying daily consumable goods, and misinformation circulated by online media—corona virus spread through the chicken—had led to sharp decrease in the price of chicken meat (Rs 70-80/kg) (Prasain, 2020b) Many farmers buried their birds due to the lack of market and feed supplies, some even sold birds on piece basis (Rs 25/ piece ) during the first 11 days of lockdown period (Prasain, 2020a). In the first 2-3 weeks of lockdown, the poultry sector faced a loss of Rs 220 million daily (Kafle, 2020). After a month and a half after embarking on a nationwide lockdown, there was an extreme shortage of chickens in the market due to low production of chicks in the hatchery, decreased feed production and many farmers did not keep the next batch of chicks. These conditions favored a skyrocketing of price of finished marketed chicken meat i.e. Rs. 450-500/kg which is 1.6 times the poultry meat price at the beginning of lockdown days (“Chicken Price Skyrockets to Rs 460 per Kg in the Valley,” 2020; Prasain, 2020c).

### **Some government and non-governmental intervention to uplift the poultry sector and management of the crisis**

**Avian Influenza:** After a massive outbreak of avian influenza in 2012/2013, the Government of Nepal declared a bird flu emergency and banned all imports of poultry-related items including live chicks, meat, eggs, and even feed. The government provided Rs. 170 per bird as compensation for the loss (“Farmers Receive Rs one billion as Compensation for Losses,” 2014). Risk based surveillance system is implemented in Nepal, and the country is divided into 3 risk categories—high, medium and low. The massive screening program conducted by the Nepal government helped to contain the further Avian Influenza outbreak in the country. As of the recent outbreak in Kathmandu and Bhaktapur (2019), the government provided 75% value of destroyed chicken marketed amount which equals to NRs 81,086,550.50 (Bird flu compensation report, 2019).

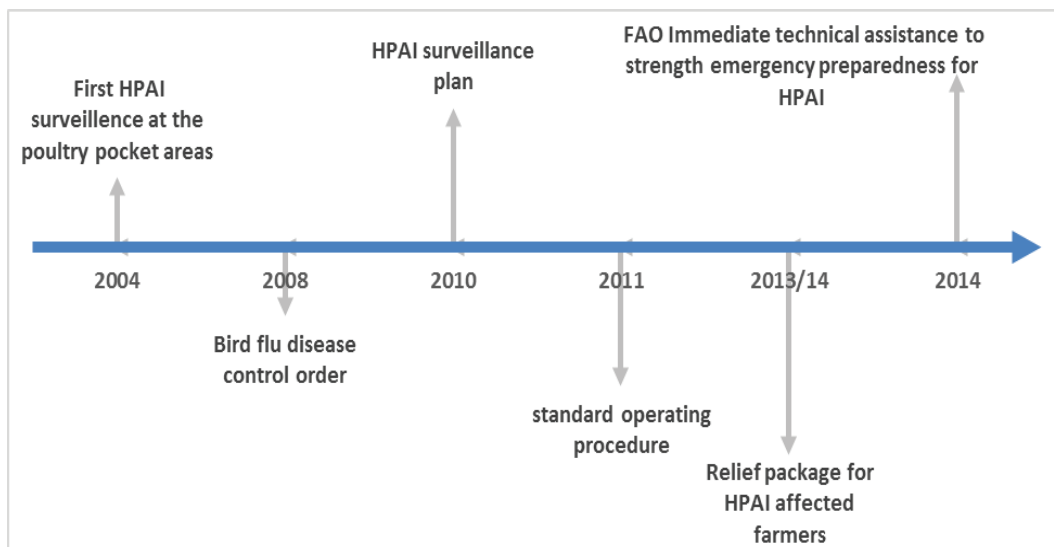


Fig 6: Bird flu control measures

**New Castle disease/Ranikhet disease control:** This disease has shown its effect on the native birds. The death and low production of eggs are correlated to the ND in rural and urban settings. Various works have been done by governmental and non-governmental agencies to prevent this disease outbreak and vaccinate backyard poultry in Nepal. The first ever vaccination of the ND in Nepal was made in the then CARD (central animal disease research division and Pakhribas Agricultural Research Center. Likewise, ND (lasota) was made in 1998 and ND (heat stable I2) was made in 2008 in the National Vaccine Production Laboratory. Commercial flocks are widely vaccinated as per the vaccination guidelines, however, the vaccination at Backyard Poultry seems challenging. Backyard Poultry being a source of sustainable protein supplementation and reared by marginal farmers as a cash crop is of huge importance in rural settings. The major threat to backyard poultry is ND disease, and to mitigate this problem, Nepal's government launches ND vaccination program. The SUA AHARA project by USAID has vaccinated 3 lakh backyard poultry in 3 districts--3 times with 10 lakh doses, as a result of which there is a reduction in mortality rate from 80% to 30%. With the success of this program, an extension of vaccinations was done in 26 districts (R. K. Neupane, 2018).

**Earthquake and Informal Trade Blockade from India:** The situation in Nepalese poultry industry is worse in times of earthquake and further exacerbated by the Indian blockade. The government has passed a relief package for disaster hit farmers. However, the relief package was further delayed by irresponsible bureaucracy and Indian Blockade.

**Insurance for Poultry Farmers:** With growing poultry farmers, and increased frequency of outbreak of disease (bird flu), the Nepal government has started an Insurance policy for livestock farmers with great incentives. For the broiler farmers they have to pay only 1.5% of total insurance premium amount and for layers and parent farmers they have to pay 5% of the total insurance amount. Insurance should be renewed with a new batch of flocks on the farm (“Plant and livestock insurance,” 2019).

**Rural Community Targeted Programs:** Governmental and non-governmental organizations have focused on rural poultry enhancement for food security and nutrition balance. Different programs - cooperative poultry farming programs, mini hatchery establishment programs, backyard poultry and dual-purpose poultry promotion programs - and small farmers targeted with poultry farming programs have been run by government and non-government agencies (Livestock Statistics of Nepal 2016/17, 2018).

**Major challenges for poultry industry in Nepal**

**Native / Indigenous Breed :** Nepal holds three major indigenous breeds namely: Sakini, Ghanti Khuile (Naked Neck), and Pwankh Ulte (Frizzled Feather), which are known as major native poultry genome stocks. Among the three, SAKANI holds the major share with 50% of total birds. These breeds have the pros like well adopted for various altitude and temperature ranges— Temperate Hills to Tropical Terai have disease resistance, good scavenging capability and can live without regular feeding. However, they possess some cons like low dressing percentage, low hatchability, low egg production, and high chick mortality. These birds are not found in the mainstream poultry market, it is a huge challenge to bring the native birds into the commercial market and make them competitive with the exotic breed of chicken.

**Feed Ingredients:** Nepal imports the majority of poultry feed ingredients from the neighboring country (India).

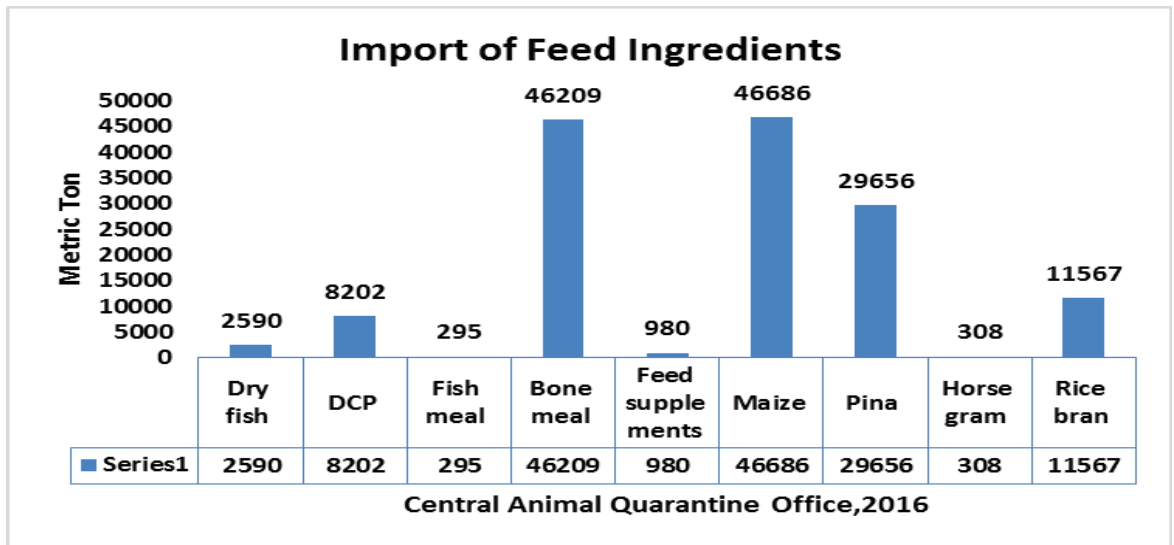


Fig 7: Import of feed Ingredients

Almost 60% of feed ingredients are imported in Nepal, with maize being the highest to be imported at 46686 metric tons. Importing feed ingredients has a direct effect on poultry products like meat



and egg. (Rijal, 2018). As per NFIA (Nepalese feed Industries Association, 2017) NRs 1.8 bilion worth of feed supplements are imported by the feed industry (Singh, 2018).

**Fragile Pricing:** Nepalese Chicken meat and egg is fluctuating and many variables determine the price. Likewise, the presence of a plethora of middlemen in the poultry product value chain has also affected the pricing of poultry products (Prasain, 2020c; Shrestha et al., 1998). In addition to this, a major factor for this fragile pricing is lack of proper intervention by the government and consumer association.

**Veterinary Services and Diagnostic facilities:** Veterinary labs and diagnostic facilities were found to be the same as those that were present in the then HMG Nepal, but only little or no change has been made to increase the facilities. Nepal still struggles to implement the federal system of administration, which has also aided poor governmental services. The dearth of skilled manpower in diagnostic and surveillance facilities along with technical equipment’s (molecular level) had crippled the veterinary service sector. Only one Avian Designated laboratory NADIL (Nepal Avian Disease Investigation Laboratory) which was established in 2004, can’t handle all the surveillance and diagnostic cases. Thus, the burgeoning poultry sector is not in line with the growth of surveillance and diagnostic facilities

**Veterinary Acts, Standards and Regulations:** Nepal has drafted numerous acts and regulations directly tied to animal heath, meat hygiene and animal feed. Some of these important acts and standards are listed below:

Table 1. Different acts and standards related to Poultry sector in Nepal (Rijal, 2018)

<b>Acts</b>
<ol style="list-style-type: none"> <li>1. Animal health and livestock services act, 1998 and regulation, 1999</li> <li>2. Nepal veterinary council act, 1998 and regulations, 2000</li> <li>3. Nepal Agriculture Research Council Act, 1991</li> <li>4. Feed act, 1976 and regulations, 1984</li> <li>5. Slaughterhouse and meat inspection act, 1998 and regulation, 2000</li> <li>6. Drug act, 1978</li> </ol>
<b>Standards</b>
<ol style="list-style-type: none"> <li>1. Standard for poultry breeding farms: 2005</li> <li>2. Hatchery standard, 2005</li> <li>3. Quarantine standard for hatching eggs, 2005</li> <li>4. Quarantine standard for importation of parent and commercial chicks, 2005</li> <li>5. Quarantine standard for importation of table eggs, 2005</li> <li>6. Quarantine standard for importation of hatching eggs, 2005</li> <li>7. Veterinary standards for biological products, 2006</li> <li>8. Standard for import and export of meat and meat products, 2007</li> <li>9. Standards for Broiler Poultry Management, 2007</li> <li>10. Animal transportation standard, 2007</li> <li>11. National microbial standards for meat, milk, eggs and MRL of veterinary drugs, 2012</li> </ol>



12. Standards for Import Risk Analysis of Live Animals, Animal Products and Veterinary Biology, 2016
13. Protocol for import export recommendation, livestock related industry establishment and sales distribution permission, 2016

Each and every act and standard related to the poultry sector has its own importance and cannot be neglected. However, the effective implementation of these acts and standards seems challenging. Many of the acts and standards like MRL (minimum residue limit), drug act, feed act, are others are being violated due to lack effective implementation and good governance. In addition, many researchers have found violations of public health-related burning issues (antibiotic residue and antibiotic resistance) associated with chicken meat (R. Neupane & Kaphle, 2019).

### Prospects and necessary future interventions

The recent scenario of poultry industry in Nepal vividly represents its vibrant growth. Some of the reasons, like preference for white meat over red meat by Nepalese consumers, cheap sources of protein, and tourism boosts have favored the growth of the poultry industry and continued the build up momentum. Despite providing a significant share of GDP and employment for more than 1.5 million people, Nepalese poultry sector faces many constraints as discussed. Some future interventions that can serve a useful purpose are given below:

**Feeding materials/ingredients:** The majority share of the cost of poultry farming goes to feed and the use of indigenous and local feed ingredients is a major conflict with the establishment of self-sustained poultry industries in Nepal. To produce enough (maize and soya) different approaches like contract farming, cooperative farming, could be carried out. Poultry feed industries can collaborate with local cooperatives and communities to produce the feed ingredients, which in turn benefits both the farmers and industries. Probiotech (Nimbus feed industries), had initiated the contract farming (maize, rice) with the local cooperatives and farmers with the support of International finance corporation (a world bank group), and GAFSP, till 2015 it had trained about 4000 maize farmers with 70% of them adopting new technology with an increase in 20% of local maize productivity (*IFC INCLUSIVE BUSINESS CASE STUDY and Probiotech*, n.d.). Recently, a research work on integration of black soldier fly larvae as a protein source in poultry feed was carried out at Agriculture and Forestry University, which can serve as a good alternative to imported protein feed, however, a thorough cost benefit analysis cannot be discounted.

**Native breed integration in commercial poultry farming:** Indigenous breeds of poultry (Sakini, Ghantikhulae, and Pwankhulte) can be an alternative to imported breeds of poultry. Incorporating these breeds into the mainstream market from the backyard can be a sustainable alternative to dependence towards foreign breeds. Different types of genetic intervention like selective mating and breed hybridization can be done in native breeds for sustainability. Currently in Nepal there is only one grandparent farm established by Cobb, but only one grandparent farm cannot hold the demand of hatcheries, thus there is urgent need of establishment of grandparent farm to sustain chicks demand.

**Antibiotic resistance and residue surveillance:** Many researchers have pointed out that antibiotic residue in poultry meat is higher than the minimum residue level set by WHO. 24.66% of marketed broiler meat in the Kathmandu metropolitan city has shown the presence of antibiotic residue, in a study conducted in 2019 (Maharjan et al., 2020). However, more surveillance activities are needed to understand the situation better. In order to ensure safe and quality production of poultry products, periodical screening of poultry products for residue and resistance is inevitable. There is also an urgent need to establish a separate veterinary drug enforcement agency.

**Vaccine and Drug Manufacturing:** Nepal imports huge amounts of poultry vaccines from India and other countries. The National Vaccine Production Laboratory produces vaccines for various poultry diseases like New Castle/IBD, however, many hatcheries and large scale poultry farms are using imported vaccines. Biovac Nepal, a private company, is also producing some poultry vaccines. Veterinary and poultry drugs (antibiotics, water acidifiers and liver tonics) are imported from India and other countries though there are few Nepalese drug manufacturers. The import of large quantities of vaccines and veterinary drugs suggest that either Nepalese manufacturers are not competent enough (quality and reliability) or they cannot supply the demand by Nepalese market.

**Shift to environmentally controlled housing:** The dynamics and contemporary scenario of poultry market in Nepalese context suggest that in order to sustain the farmer capability for the long run, transformation from the traditional housing system to modern environmental housing is inevitable. Now, well-established business tycoons: Chaudhary Group, Golcha Group, along with other business enterprises from FDI (Foreign Direct Investment) are keeping an eye on the fortuitous poultry business, as this type of investment can provide consumers with safe and quality meat products but can hamper small-scale poultry farmers as they are obliged to change their business or shift to costly modern farming practices.

## CONCLUSION

To sum up, the Nepalese poultry market has huge potential for growth and expansion with flexibility for product diversification. However, things like fragile pricing, import of high amounts of feed ingredients, diagnostic and surveillance facilities, and native breed integration should be solved in order to sustain the Nepalese poultry farmers in the long run. The drafting and launching of relief packages for crisis hit farmers (COVID-19) should be carried out in an immediate manner to save the farmers from bankruptcy. In addition to this, there should be regular monitoring and evaluation of the governmental policies/acts/standards/specifications to ensure safe and quality poultry products.

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