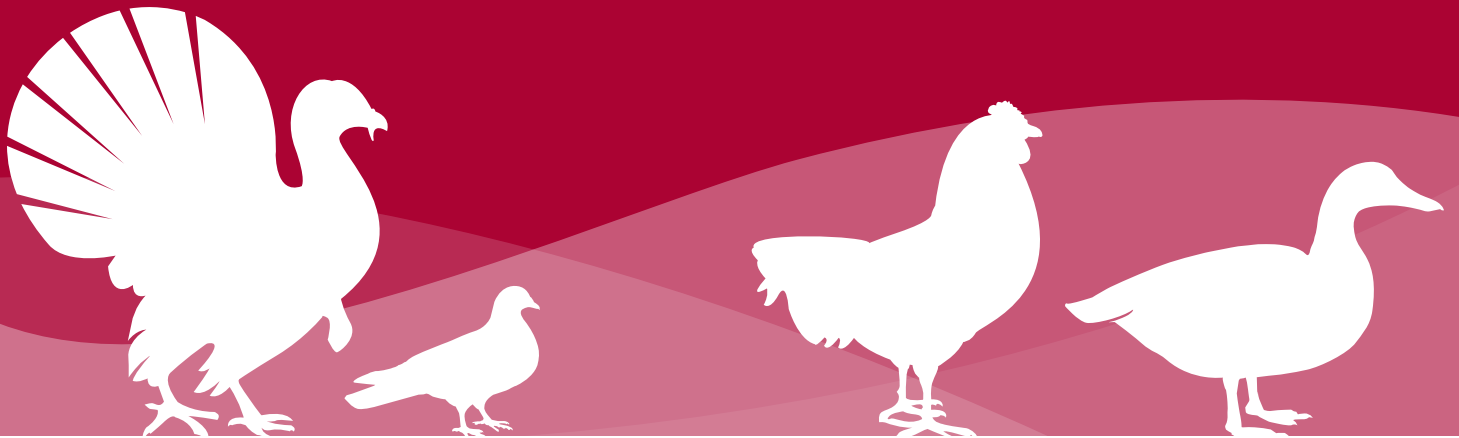




Food and Agriculture
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8

FAO ANIMAL PRODUCTION AND HEALTH



livestock country reviews

POULTRY SECTOR

Nepal

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POULTRY SECTOR

Nepal

Recommended Citation

FAO. 2014. *Poultry Sector Nepal*. FAO Animal Production and Health Livestock Country Reviews. No. 8. Rome.

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E-ISBN 978-92-5-108496-0 (PDF)

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Foreword

The poultry sector continues to grow and industrialize in many parts of the world. An increasing human population, greater purchasing power and urbanization have been strong drivers of growth.

Advances in breeding have given rise to birds that meet specialized purposes and are increasingly productive, but that need expert management. The development and transfer of feed, slaughter and processing technologies have increased safety and efficiency of poultry production, but favour large-scale units rather than small-scale producers. These developments have led the poultry industry and the associated feed industry to scale up rapidly, to concentrate themselves close to input sources or final markets, and to integrate vertically. One element of the structural change has been a move towards contract farming in the rearing phase of boiler production, allowing farmers with medium-sized flocks to gain access to advanced technology with a relatively low initial investment.

A clear division is developing between industrialized production systems of large and medium size, feeding into integrated value chains, and extensive production systems supporting livelihoods and supplying local or niche markets. The primary role of the former is to supply cheap and safe food to populations distant from the source of supply, while the latter acts as a livelihood safety net, often as part of a diverse portfolio of income sources. Extensive small-scale, rural, family-based poultry systems continue to play a crucial role in sustaining livelihoods in developing countries, supplying poultry products in rural but also periurban and urban areas, and providing important support to women farmers. Small-scale poultry production will continue to offer opportunities for income generation and quality human nutrition as long as there is rural poverty.

In order to develop appropriate strategies and options for poultry sector development, including disease prevention control measures, a better understanding is required of the different poultry production systems, their associated market chains, and the position of poultry within human societies.

This review for Nepal is part of a series of Country Reviews commissioned by the Animal Production and Health Division (AGA). It is intended as a resource document for those seeking information about the poultry sector at a national level, and is not exhaustive. The statistical data that are included from FAOSTAT are partly unofficial data or FAO estimated data. For details the reader is advised to consult the official FAOSTAT database at <http://faostat.fao.org/>. Some topics of the review are only partially covered or not covered at all and this document is subject to ongoing updating. The author and FAO/AGA¹ welcome your contributions and feedback.

¹For more information visit the FAO website at: <http://www.fao.org/ag/againfo/themes/en/poultry/home.html> or contact either Philippe Ankers or Olaf Thieme, Animal Production Officers. Email: Philippe.Ankers@fao.org and Olaf.Thieme@fao.org
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Acknowledgements

I express my sincere gratitude to all organizations and individuals that provided me with the necessary support to carry out this task. I am grateful to the FAO representation in Nepal for entrusting me with this study and providing proactive support during its compilation.

I sincerely appreciate Dr. Howell Anthony Williams, CTA, FAO-AI Programme and Dr. Surendra Kumar Shrestha, National Project Director, Immediate Technical Assistance to strengthen emergency preparedness for HPAI, and other members of the team for providing me the opportunity to undertake this task along with much needed guidance, support throughout the stage.

I am grateful to Mr. Mohinder S. Oberoi, Sub-regional Manager, ECTAD and Mr. Nafis Khan, Emergency Program officer, ECTAD for providing related documents for literature review along with valuable suggestions.

Similarly, I acknowledge constant support extended by the Director General, Deputy Director Generals, Directors and other senior officers from the Department of Livestock Services.

I also would like to thank Mr. Ganesh Sharma, a freelance researcher and statistician, other resource persons and private organizations who supported me to complete this assignment.

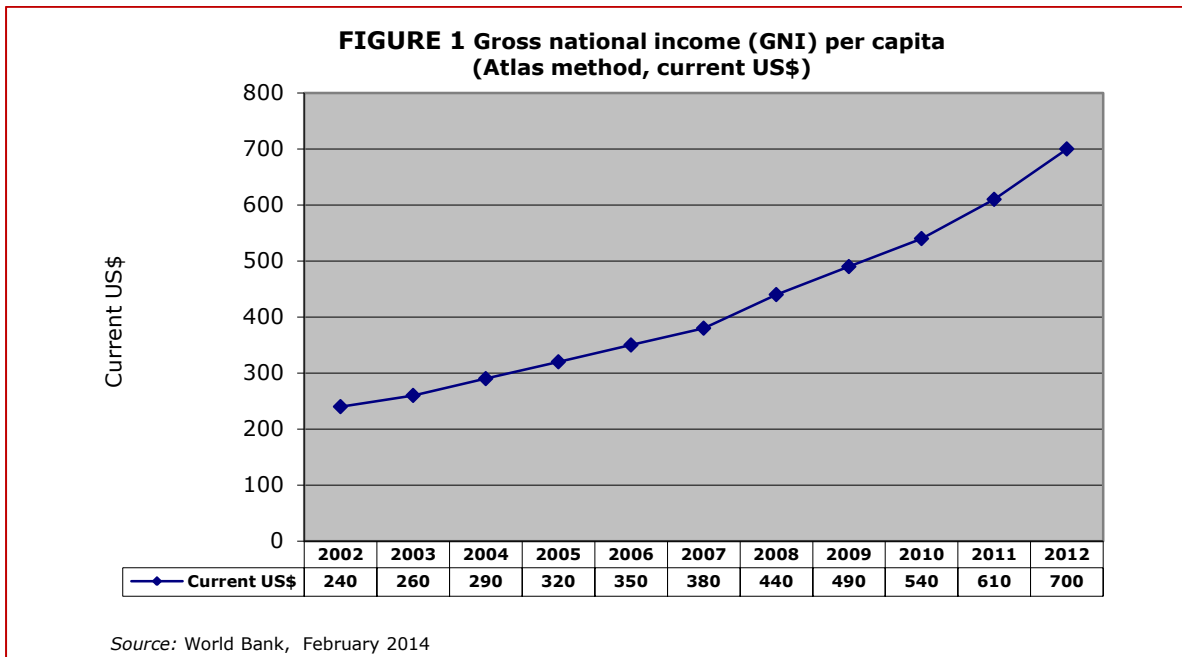
Acronyms and abbreviations

A.D.	Anno Domini
AHRD	Animal Health Research Division
APP	Agriculture Perspective Plan
AIDS	Acquired immune Deficiency Syndrome
B.S.	Bikram Sambat (Nepali Calendar)
CBS	Central Bureau of Statistics
CCT	Core Coordination Team
CLDP	Community Livestock Development Project
CVL	Central Veterinary Laboratory
DLS	Department of Livestock Services
DLSO	District Livestock Services Office
DOC	Day Old Chicks
ECTAD	Emergency Center for Trans-boundary Animal Diseases
FAO	Food and Agricultural Organization of the United Nations
FMD	Foot and Mouth Disease
GON	Government of Nepal
GNI	Gross National Income
GDP	Gross Domestic Product
HIV	Human Immunodeficiency Virus
HPAI	Highly Pathogenic Avian Influenza
LBM	Live Bird Market
MDG	Millennium Development Goal
MoAD	Ministry of Agricultural Development (previously MoAC: Ministry of Agriculture and Cooperatives)
NGO	Non-governmental Organization
NRs	Nepalese Rupees
OIE	Office International de Epizootics (World Animal Health Organization)
RT PCR	Reversed Transcriptase Polymerase Chain Reaction
SEEPOR	Socio-Economic and Ethno-Political Research and Training
SMDI	Social Marketing and Distribution
SMDE	Society for Management and Development
TADs	Trans- boundary Animal Diseases
UN	United Nations
USAID	United States Agency for International Development
USD	US Dollar
VDC	Village Development Committee

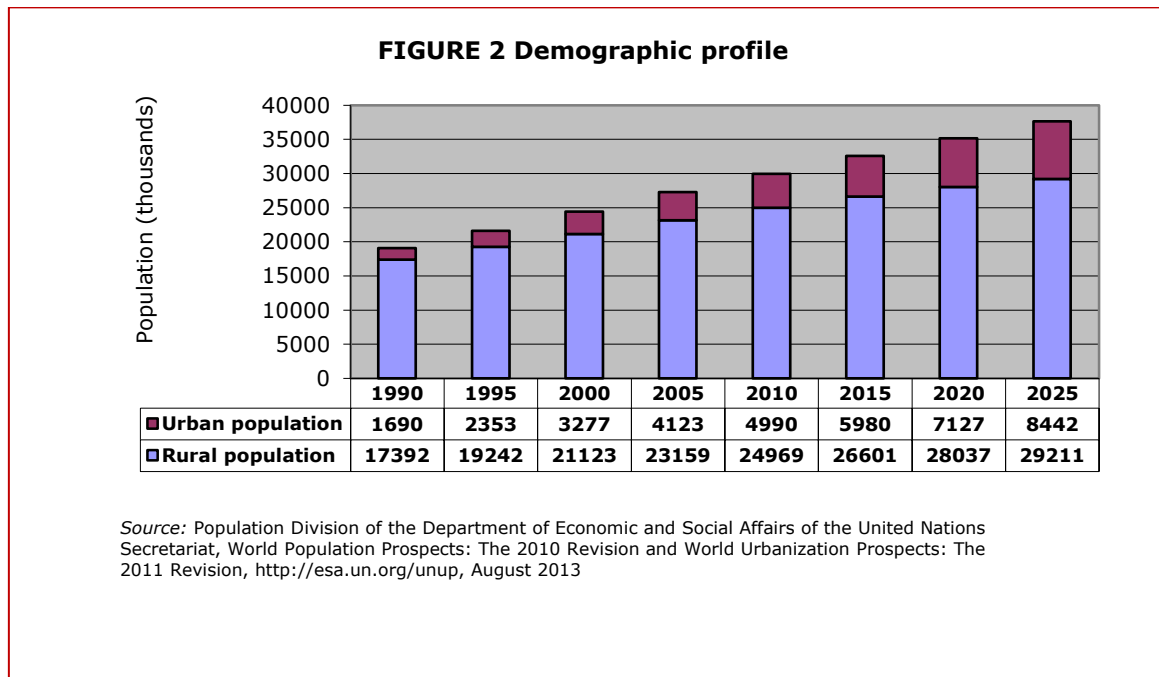
Chapter 1

The country in brief

Country	Nepal	
Location:	South Asia, bordering to North by People's Republic of China and to south, east and west by Republic of India Longitude and Latitude: 27°42'N 85°19'E	
Area	147 181 km ² (93rd)	
Population	27 474 377 (estimate 2012)	Source: World Bank 2014
Population density:	189/Km ²	Source: World Bank 2014
Population growth rate	1.16% (2012)	Source: World Bank 2014
Birth rate	22.27 births/1 000 population (2011 est.)	Source: World Bank 2014
Economy group	Low income economy	Source: World Bank
GDP	USD 18 962 962 963 (2012)	Source: World Bank 2014
Gini coefficient	0.3282 (2010)	Source: World Bank 2014
Population below poverty line \$1.25 a day	24.8% (2010)	Source: World Bank 2014
Coastline	0 km (landlocked)	
Elevation extremes	Lowest point: Kanchan Kalan 70 m; highest point: Mount Everest 8 850 m	
Climate	Varies from cool summers and severe winters in north to subtropical summers and mild winters in south	
Terrain	Terai or flat river plain of the Ganges in south, central hill region, rugged Himalayas in north	
Currency	1 USD = 98.26 Nepalese Rupees 1 Nepalese Rupee = 0.0099 USD (February 2014)	
Time Zone	NPT (GMT+5:45)	



With a Gross National Income (GNI) per capita of USD 700 Nepal is currently classified as a low income country and as a least developed country. It is land-locked and comprises of 0.03 percent of the total world land area. Nepal has the rank 41 of the most populated countries in the world²



The Population reference Bureau³ projects that Nepal's population will reach 35 662 000 by mid-2025 and 45 974 000 by 2050.

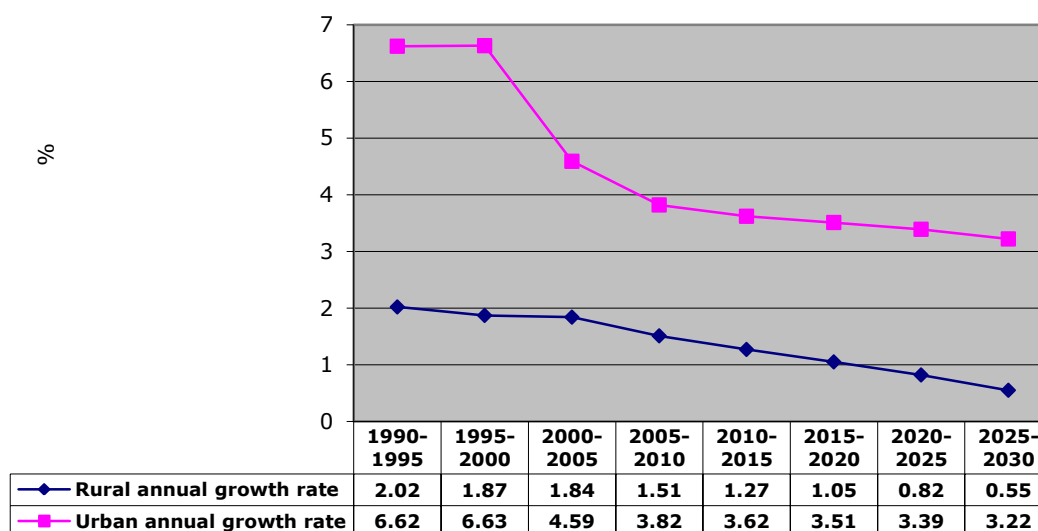
A 2010 UN report⁴ suggests that despite the decade-long conflict and political instability, Nepal's progress has been remarkable in a number of areas. Some examples include: the number of

² <http://www.infoplease.com/world/statistics/most-populous-countries.html>

³ National Population and Housing Census 2011(National Report)

people living below the national poverty line has gone down to 25 percent, net school enrollment rate has increased to 93.7 percent, gender parity has been achieved in enrolment for primary education, under five mortality reduced to 50 per 1000 live births and maternal mortality has reduced to 229 per 100 000 live births which represents a 50 percent reduction over a period of 10 years. Moreover, Nepal has succeeded to reduce the spread of HIV/AIDS.

FIGURE 3 Annual population growth rates



Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2010 Revision and World Urbanization Prospects: The 2011 Revision, <http://esa.un.org/unup>, August 2013

There is a strong trend towards rapid urbanization. This is fueled by migration towards cities and towns caused by the decade long conflict in turn reducing population growth rates in rural areas. This has also negatively affected crop production due to the large amount of agricultural land left untended.

⁴ MDG Progress Report for Nepal 2010, United Nations Development Programs
<http://www.undp.org/content/nepal/en/home/mdgoverview/>

Chapter 2

Profile of the poultry sector

In Nepal, the national poultry flock includes chickens, ducks, pigeons and other birds that are kept in different production system.

Ranking

Chicken meat production ranking in the world: 112th

Egg production ranking in the world: 92nd⁵

GDP contribution by agriculture: 33.7 percent

GDP contribution by poultry: 3.5 percent⁶

Economics⁷

Investment: NRs 22billion industry⁸

Export: No history of export, recently started exporting broilers/eggs to Bhutan

Import: 1 091 730⁹ (985 503 broiler and 107 894 layer parent stock in 2011/2012), ample evidence of informal trade of local, broiler live chickens, eggs and dressed chickens from India in cross-border districts.

Growth rate: 17-18 percent

Number of farms: More than 1 000 broiler farms and 500 layer farms

Grand Parent stock: established by Cobb-Nepal with start of production from September 2013

Supporting industries: 98 hatcheries, 111 feed industries

Employees: 70 000 direct and many more indirectly

Production: 1 170 573 broilers and 118 208 layers chickens per week

Feed production: 646 845 tonnes in 2010/2011

Demand of poultry meat/day: 150 000 kg/day

⁵ Executive Guide-2004/05

⁶ Nepal Feed Industry Association Brochure, 2011

⁷ www.myrepublica.com, Ministry of Agriculture and Cooperatives (2012) and http://www.nimbusnepal.com/script/news/news_detail/id-46

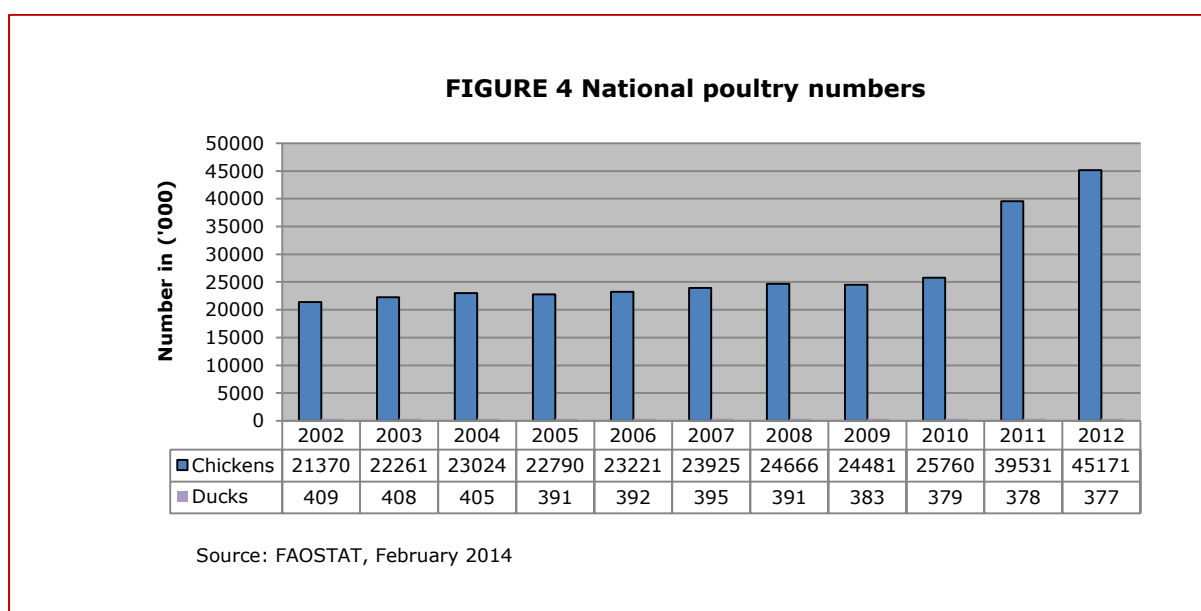
⁸ Nepal Feed Industry Association Brochure 2011

⁹ Central Animal Quarantine Office, Annual report, 2011/12

2.1 National poultry flock

The national population of poultry has gradually increased from 21.37 million in 2002 to 45.17 million in 2012 except in 2005 and 2009 where it recorded a minor decrease than that of their previous years (Figure 4). However, the duck population decreased from 0.41 million in 2002 to 0.38 million in 2012. No distinction has been made between commercial and subsistence farming in the data collected after the agricultural census 2001/2002. In that census, the number of pigeons and other birds were reported to be 1 845 234 and 57 313 respectively.

According to D. P. Parajuli (2008), 46 percent of the total bird population is of indigenous or local poultry scattered throughout the country, mostly in rural areas and the remaining 54 percent of the poultry population are reared by organized commercial poultry farms confined mostly to large peri-urban areas. There is no segregation made between backyard and commercial holdings for the poultry population figures and one must depend on the agriculture census conducted every ten years to get an exact picture. The census for 2011 has been carried out but the processed data are not yet available.



2.2 Geographical distribution of poultry flocks

2.2.1 Chickens

The Statistical Information on Nepalese Agriculture 2011, published by the Ministry of Agriculture and Co-operatives, Agri-Business Promotion and Statistics Division includes data about the distribution of poultry in the country. However, information in this report is limited because it does not offer disaggregated data by poultry production type. Moreover, it contains no information about other birds, namely pigeon, geese, and turkey. Distribution of chickens and ducks throughout Nepal's five development regions is presented in Table 1.

TABLE 1
Distribution of poultry by administrative division

Region	Chickens		Ducks		Total	
	Numbers	%	Numbers	%	Numbers	%
Eastern	8 213 319	20.77	141 200	37.35	8 354 519	20.93
Central	18 334 969	46.38	113 446	30.01	18 448 415	46.23
Western	6 281 664	15.89	84 268	22.3	6 365 932	15.95
Mid-western	4 496 246	11.38	28 504	7.53	4 524 750	11.34
Far-western	2 204 422	5.58	10 632	2.81	2 215 054	5.55
Total	39 530 620	100	378 050	100	39 908 670	100

Source: Statistical information on Nepalese agriculture 2010/11

The distribution of chickens and ducks with respect to the three main physiographic regions of Nepal, Mountains, Hills and Terai, is given in Table 2.

TABLE 2
Distribution of poultry by physiographic region

Districts	Chickens		Ducks		Total	
	Numbers	%	Numbers	%	Numbers	%
Mountain	2 035 560	5.14	10 108	2.7	2 045 668	5.13
Hill	19 858 568	50.25	93 832	24.8	19 952 400	49.99
Terai	17 636 492	44.61	274 110	72.5	17 910 602	44.88

Source: Statistical information on Nepalese agriculture 2010/11

The Table 3 provides the distribution of backyard and commercial poultry population in the districts with higher numbers of poultry. In these locations about 82 percent of poultry and poultry products come from commercial holdings. The highest concentration of commercial poultry is found in Chitwan (46%) and Kathmandu (41%) both contributing around 87 percent of total commercial poultry. Biratnagar is reported to have the highest proportion of backyard holdings (68.3%) followed by Chitwan (10.1%) and Pokhara (9.7%).

TABLE 3
Distribution of backyard and commercial poultry in districts with large populations

Districts	Backyard		Commercial		Total	
	Numbers	%	Numbers	%	Numbers	%
Pokhara	126 980	9.65	918 327	21.86	1 045 307	18.94
Chitwan	132 892	10.1	1 932 674	46	2 065 566	37.43
Biratnagar	898 522	68.26	259 958	6.19	1 158 480	21
Kathmandu	17 880	1.36	1 720 611	40.95	35 760	31.51
Bhaktapur	80 000	6.08	860 000	20.47	940 000	17.04
Lalitpur	60 000	4.56	212 655	5.06	272 655	4.94
Total	1 316 274		5 904 225		7 220 499	

Source: District livestock services offices, Annual Progress Report, 2008/09

2.2.2 Ducks

According to the Ministry of Agriculture and Cooperatives¹⁰ there are more than 378 050 ducks in Nepal. Geographically, 72.5 percent are located in the Terai followed by 24.8 percent in the Hills and 2.7 percent in the Mountains. In terms of administrative division, the distribution of ducks is highest (37.4%) in the Eastern Development Region followed by the Central (30%), Western (22%), Mid-western (7.5%) and Far-Western (2.8%) regions. Overall, Nepal's duck population is decreasing, likely affected by limited availability of water sources and changes in farmers' priorities. The ratios of chickens to ducks were 56.84 in 2003/04, 58.14 in 2004/2005, 59.24 in 2005/06, 60.72 in 2006/07, 63.25 in 2007/08, 63.92 in 2008/09, 67.96 in 2009/10 and 105.37 in 2010/11.

The duck population is scattered throughout the country and generally raised in traditional farming systems alongside local chickens. The ducks are often raised around water sources and are more common in certain ethnic communities like Tharu, Newar and Rajbansi.

Key informants reported that there was one commercial duck farm in the Sunauli, Rupandehi district which was closed in August 2010. Almost all ducks raised in backyard systems are free range and concentrated near water sources. The estimated number of free range ducks is 10 000 –12 000 in Jhapa, 15 000 in Parsa, 25 000 in Rupandehi and 35 000 in Banke.

Ducks are also used for cultural ceremonies. In the Jhapa district, the Rajbansi an indigenous community imports a large number of ducks from India during their "Siruwa" festival. It is reported that during important festivals like Dashain and Saun Sankranti, the Newar and Tharu communities consume a large number of duck eggs and use ducks as religious offerings, furthering illegal imports in the country. In 2008, the Government of Nepal confiscated 380 illegally imported ducklings and 14 000 duck eggs in the Parsa district before and during the festive season.

2.2.3 Pigeons

In accordance with the census report published by CBS Nepal in 2001/2002 Nepal had a population of 1.8 million pigeons constituting less than 1 percent (0.1) of the total number of birds in Nepal. No commercial farming of pigeons has been recorded. They can be spotted in large number in different temples and holy sites throughout the country offered as a religious sacrifice by pilgrims. They are primarily reared for this purpose, though consumption of pigeons can be found. According to a study entitled "Integrated characterization of four cross-border areas of Nepal in the border with India for the risk assessment of HPAI: a socio-economic perspective" conducted by the Society for Management and Development (FAO, 2010a), approximately 10-12 percent of the households in the study districts (Jhapa, Parsa, Rupandehi and Banke) were found to keep pigeons. That same study showed pigeons were easily available in most of the live bird markets of Parsa and Banke, where consumption was observed throughout the year.

2.2.4 Other birds¹¹

The owner of a newly established ostrich farm in Rupandehi reported that they are rearing around 300 parent stock ostriches and it will take 2 years to begin marketing. In addition, there is one quail farm located in the Ranighat-Parsa district reported to raise and sell 20 000 quails every 5 months. Their major markets are Jhapa, Rupandehi and the Kathmandu Valley.

A small sparrow-like bird that flies in groups and is normally found in sugar cane fields, locally known as "Bagedi", (belonging to the *Fringillidae* species) was also found to be transported throughout the country for consumption during winter. Prime districts for trapping those birds are Dhanusha, Saptari & Sarlahi. Some catching crews known as "Chidimars" and "Byadha" were located in Jhapa, Kapilvastu, and Banke engaged in trapping wild birds for household consumption and selling purpose.

¹⁰ Statistical Information on Nepalese Agriculture 2010/11

¹¹ SMD#, 2010, p-18

2.2.5 Migratory and wild birds

Nepal lies on the migratory flyway of a large number of wild water birds. A total of 34 migratory bird species visit the country every summer for breeding purposes along with the winter migratory birds that come here in search of favorable temperature from Siberia and Eastern Europe. Out of the 864 birds species recorded in the country, over 200 species are wetland dependant. While the numbers of migratory birds are high, data regarding the type and number of birds that might carry the H5N1 virus is not available due to the limited ability to identify wild bird species and the mixing of species at the sampling zone. The national parks and wildlife reserves, which act as the safe sanctuary for the migratory birds, are the main flyways. Recognized and verified zones are shown in Table 4.

TABLE 4
Sites of migratory birds

Location	District
ShuklaPhanta Wild reserve	Kanchanpur
Ghodaghodi Lake	Kailali
Bardiya National Part	Bardia
Chitwan National Park	Chitwan
Jagdishpur Lake	Kapilvastu
Koshi Tappu	Sunsari

Source: FAO/USAID, 2009

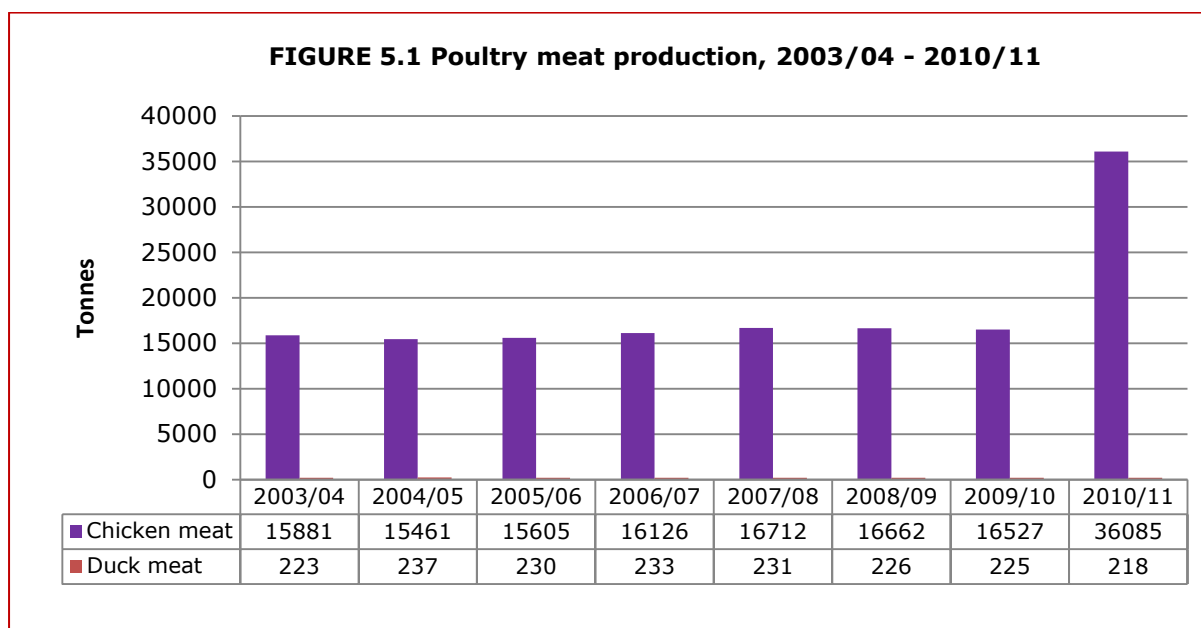
The study "Integrated characterization of four-cross border areas of Nepal in the border with India for the risk assessment of HPAI: a socio-economic perspective" (SMDE, 2010) reported the following: In Jhapa, 5 wetlands or ponds namely Biratpokhari, Jamunkhari, Kichakbadh, Chilagadh and Setukumari, were the temporary shelters of wild and migratory birds; In Rupandehi, Gaida lake (Bishnnupura), Hasanpur Lake (Suryapura) and Gajedi lake (Chhapiya) and the wetlands of Lumbini were reported to be the temporary shelters for both wild and migratory birds; Puraina Lake was the only location where birds were present in the Banke district. In addition, large numbers of water fowl were found to reside in rice crop fields and nearby trees in the rainy season in the above districts.

Almost all study districts investigated are located within the flyway of migratory birds. Local people call them "Malchari" and "Karyang-Kurung" (*Grus grus*) which are known as geese and cranes, respectively in English. Nepal is both the destination of summer migratory birds coming from South East Asia as well as from Africa and Australia and winter migratory birds from Siberia and Eastern Europe.¹²

2.3 Production

The Figures 5.1 and 5.2 show the estimated production of chicken and duck meat and of eggs from commercial and backyard holdings. Chicken meat production increased from 15 881 tonnes in 2003/04 to 36 085 tonnes in 2010/11. The duck meat production was almost stable during the same period but with small changes from one year to another. The proportion of chicken meat among all poultry meat for the same eight years period was always above 98 percent (Fig. 5.1).

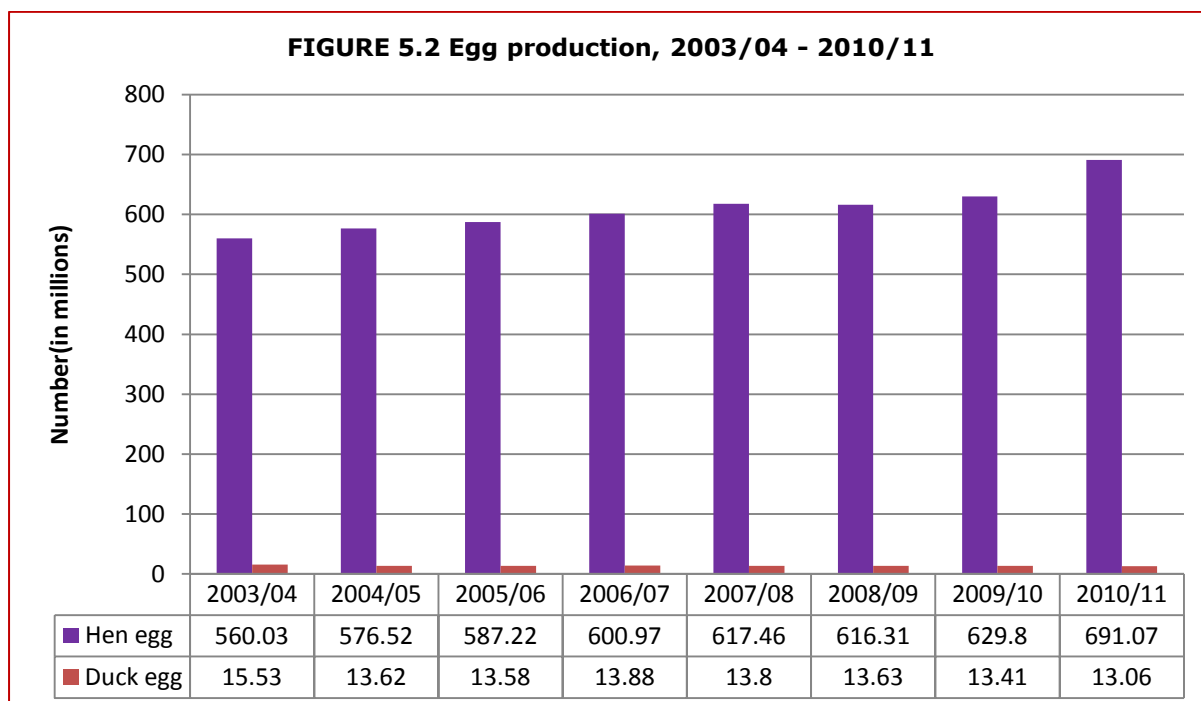
¹² www.ojmtravel.com/news/nepal-heaven-for-migratory-birds



Source: Statistical information on Nepalese Agriculture 2010/11

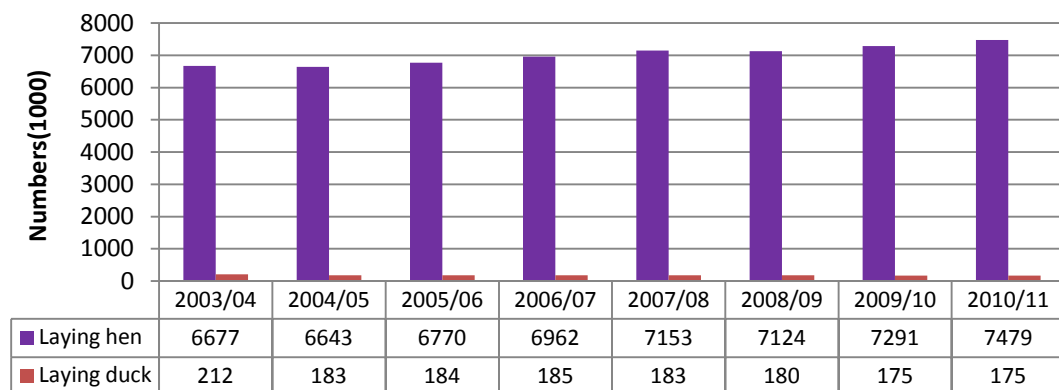
Figure 5.2 shows egg production from both commercial and backyard farms. Hen egg production showed a steady increase, except in 2008/09. In 2003/04, the national hen egg production was around 560 million and grew to 691 million in 2010/11.

Duck egg production decreased from 15.53 million in 2003/04 to 13.06 million in 2010/11.



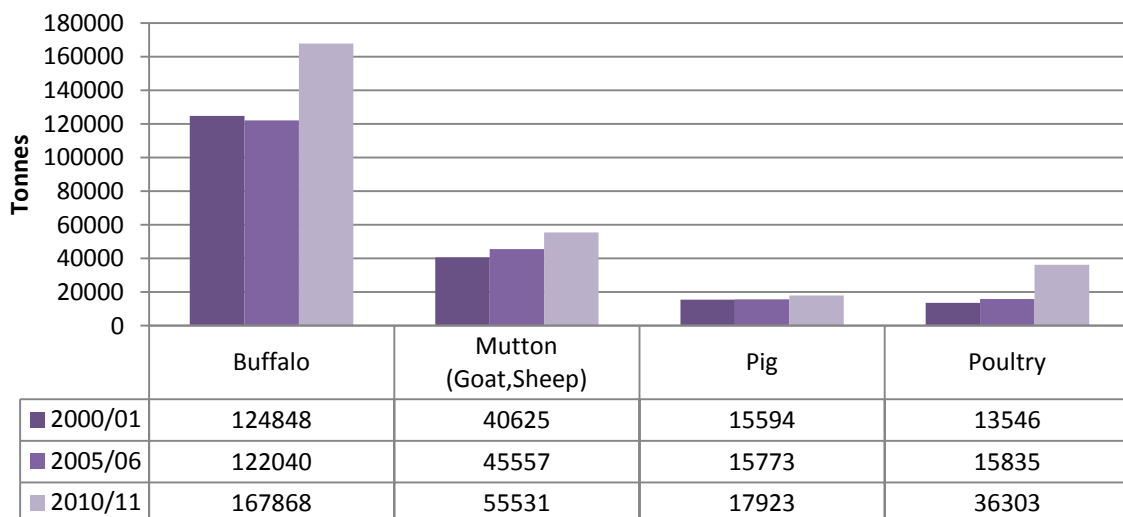
Source: Statistical information on Nepalese Agriculture 2010/11

Figure 5.3 shows the total number of laying hens and ducks during the period of eight consecutive years from 2003/04. The numbers of laying hens consistently increased from 6.68 million in 2003/04 to 7.48 million in 2010/11. Conversely, the duck layer population experienced a decrease from 0.21 million in 2003/04 to 0.17 million in 2010/11.

FIGURE 5.3 Number of Laying Hens and Ducks, 2003/04 - 2010/11

Source: Statistical information on Nepalese Agriculture 2010/11

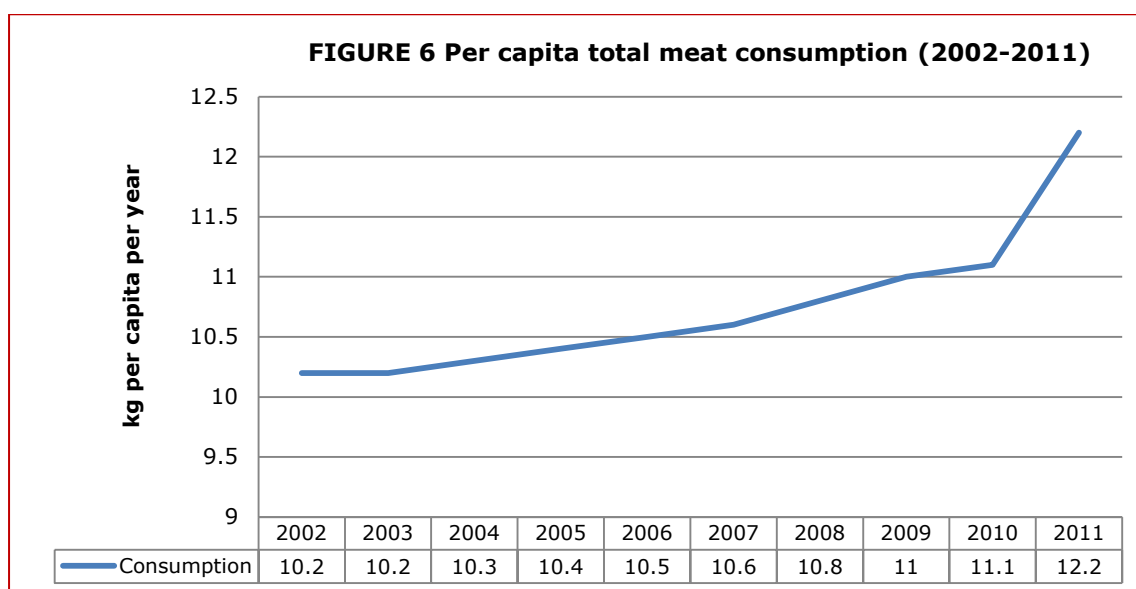
Figure 5.4 shows information about meat production from different species of animals for three years over a period of ten years period. The contribution from buffalo, mutton, pork and chicken meat represented in 2000/01 around 64 percent, 21 percent, 8 percent and 7 percent, respectively. These proportions remained similar until 2005/06. However, poultry meat production has increased significantly in 2010/11 and the contribution from buffalo, mutton, pork and chicken meat to the total meat production has changed to 60.5 percent, 20 percent, 6.5 percent and 13 percent, respectively.

FIGURE 5.4 Meat production from different species during three periods

Source: Statistical Information on Nepalese Agriculture 2010/11

2.4 Consumption

Figure 6 indicates that the annual per capita meat consumption from all livestock and poultry in Nepal increased from 10.2 kg in 2002 to 12.2 kg in 2011¹³. In comparison to other countries in SAARC, Nepal's per capita annual consumption of meat ranked second after Pakistan (15.5Kg) and ahead of Sri Lanka (6.3Kg), India (4.2Kg) and Bangladesh (4.1Kg). However, Nepal lags far behind the world average meat consumption of 42.2Kg¹⁴. Per capita egg consumption is estimated to be 25 eggs per year.



Source: Food and Agriculture Organization of the United Nations (FAO) 2014

2.5 Trade

2.5.1 Chicken

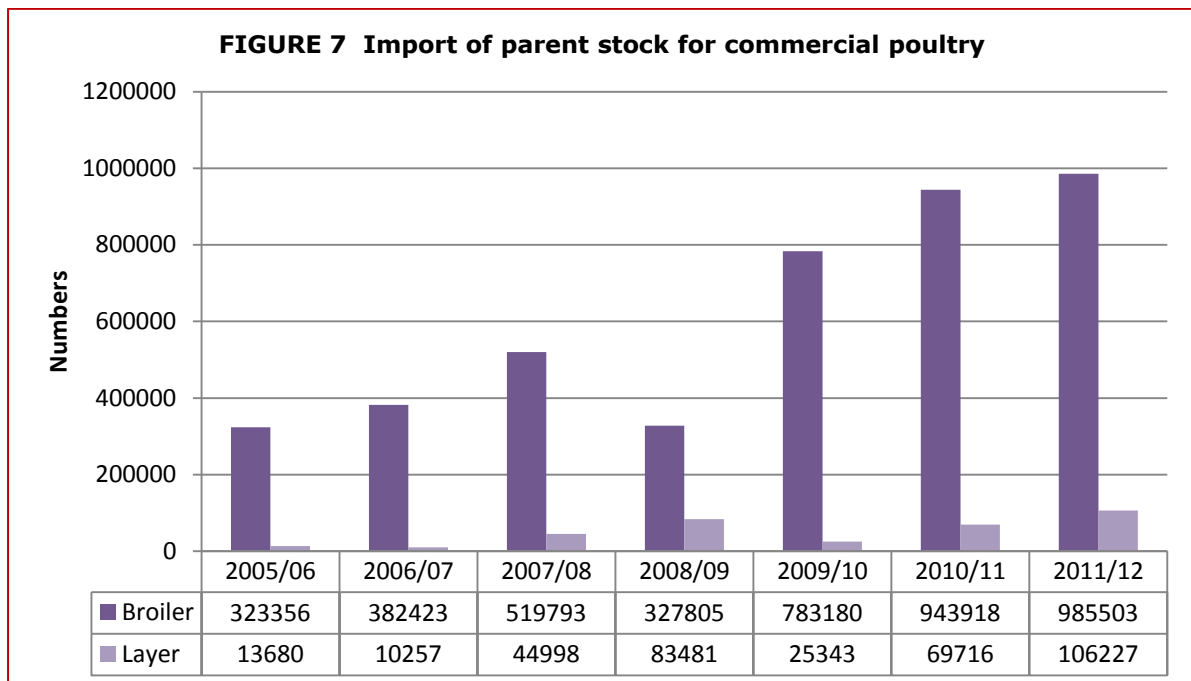
a) Import/export of parent stock chickens

Imports of parent stock nearly tripled over the seven year period from 2005/06 to 2011/12. With respect to broilers, the figures were 323 356 in 2005/06 rising to 985 503 in 2011/12. While there was total growth in the number of parent stock imports, the trend was not constant throughout the period with 2008/9 in particular showing a significant drop in numbers. Layer parent stock imports were also volatile and the same period registered an increase from 13 680 to 106 227 (Figure 7).

Various studies have indicated that the demand for day old chicks in Nepal is not met by the internal supply. No evidence has been found supporting the export of day old chicks to other countries such as India. After Avian Influenza was detected in three Indian states, the Government of Nepal banned the import of poultry and poultry products from India. Nevertheless, there are many unofficial reports that indicate that illegal importations of chicks take place frequently due to price differentials, inadequate internal supply, minimal border controls and inadequate institutional arrangements. Socio-cultural factors relating to the peoples occupying the border areas and the porous nature of the border itself are also influential.

¹³ <http://faostat.fao.org/>

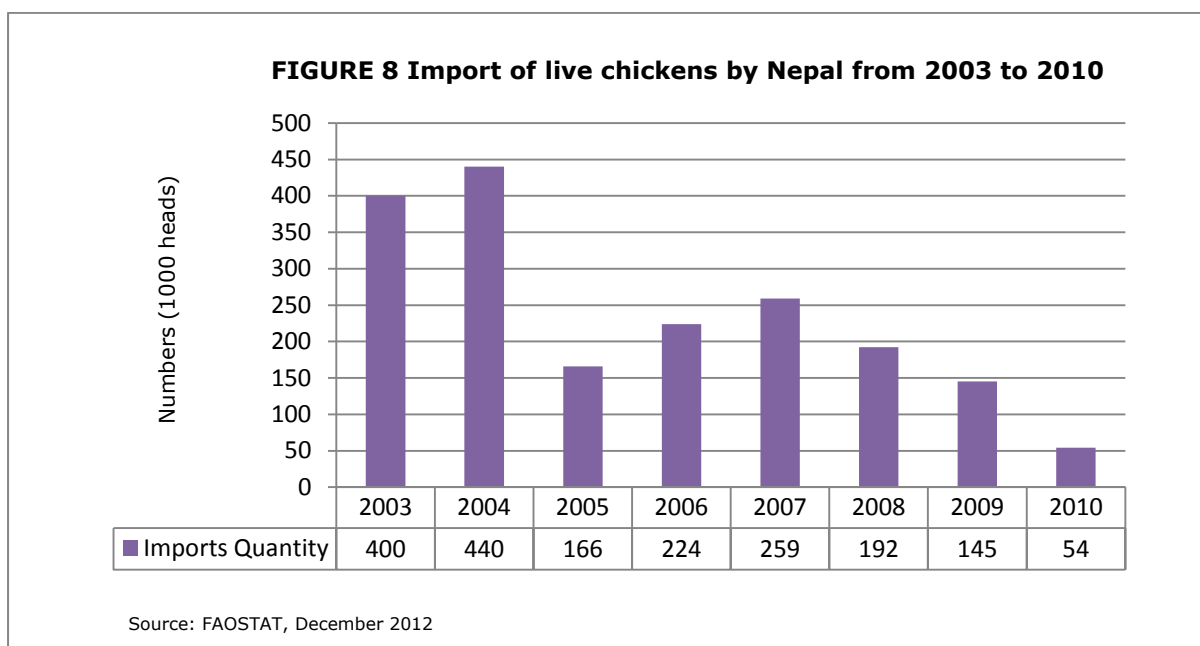
¹⁴ <http://pakistanjournal.wordpress.com/2010/02/20/per-capita-meat-consumption-declines-by-1-7pc/>



Source: Central Animal Quarantine Office, annual report, 2011/2012

b) Import/export of chickens

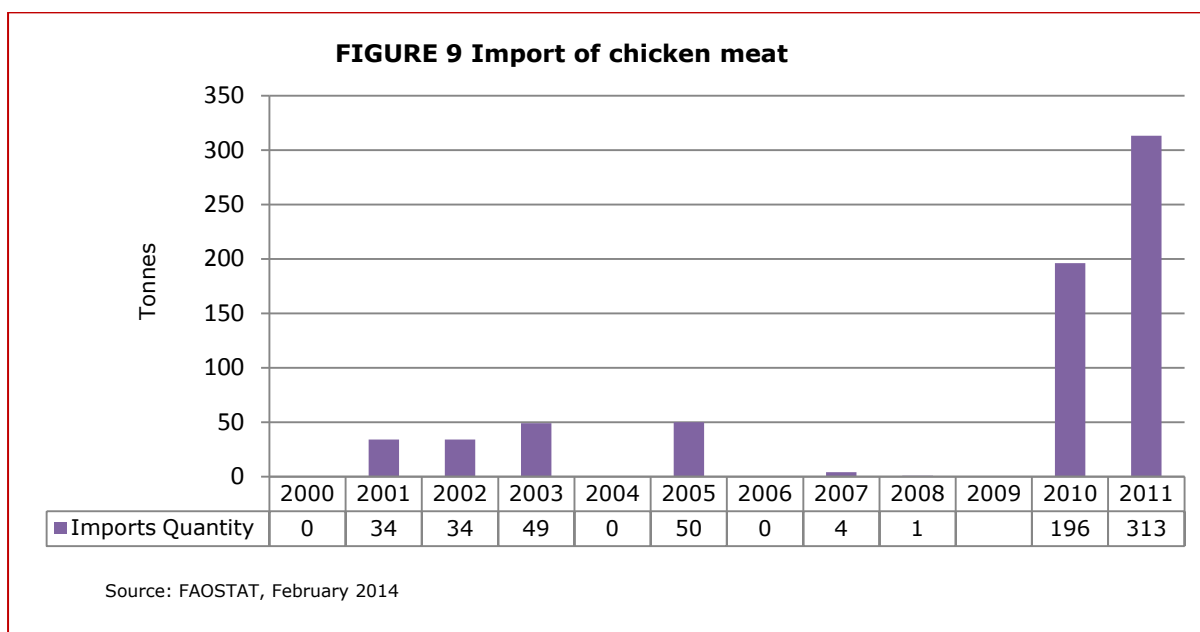
Data for the import of chickens (other than parent stock) are shown in Figure 8. The significant decrease in imports over the last eight years period from 2003 to 2010 may be attributed to the above mentioned ban on imports from India although clandestine cross border movements continue. There is only information about export data in 2003 when Nepal exported 407 000 heads to India¹⁵.



¹⁵ <http://faostat.fao.org/>

c) Import/export of chicken meat

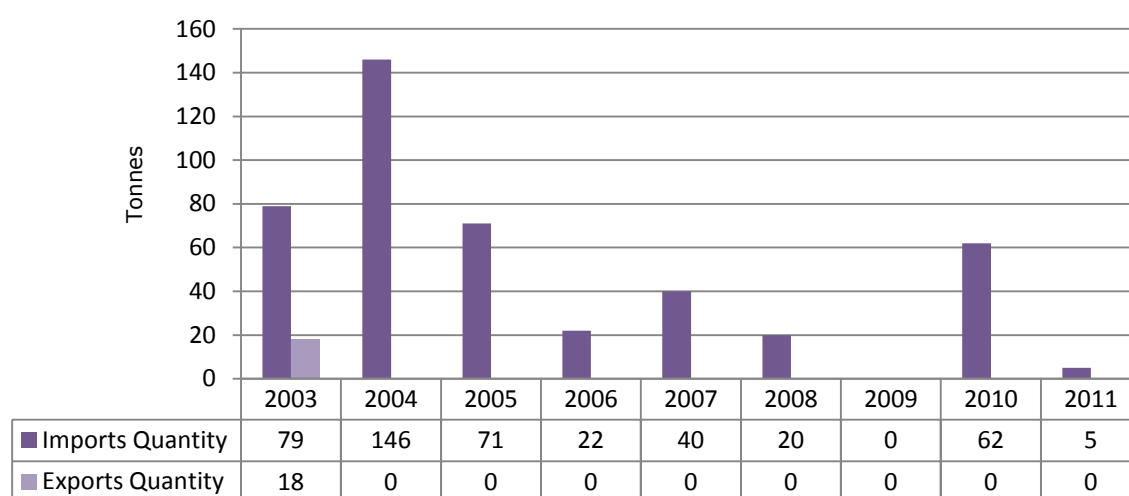
Import and export of chicken meat from Nepal to India and other countries has not been officially documented after bird flu outbreaks in India. However, there is ample evidence of the illegal entry of live and dressed chickens, broilers, native village chickens and ducks. These prohibited acts are continuously carried on by informal traders, slaughterers, individual and institutional consumers. Some reports of poultry informal exports surfaced from Parsa, Jhapa and Banke in 2010 September (SMDE, 2010).



Often, the illegal importation of poultry meat is driven by price differentials and has been recorded in districts along the Indian border including Banke and Parsa. The quantity of poultry meat imported prior to the ban is shown in Figure 9.

d) Import/export of hen eggs with shells (including hatching eggs)

Statistics collected from FAOSTAT indicated a sharp decrease in the importation of hen eggs from 2003 to 2010 except in 2004 which showed an almost double of the figure for the previous year 2003. The year 2003 recorded an export of approximately 18 tonnes of eggs.

FIGURE 10 Import/Export of hen eggs (with shells)

Source: FAOSTAT, February 2014

A value chain study (SMDI, 2009) showed that 5 000-7 000 hatching broiler eggs were imported, brought into the Morang district and transported to hatcheries. The price per hatching egg was NRs 12 (2008). Eggs from India and Nepal can be easily differentiated due to color. Eggs from India have lower cost of production and are white-shelled in contrast to Nepalese eggs that are brown although the same report indicated that India was also producing brown eggs.

In 2008 white eggs could be easily seen in organized poultry markets in the Terai districts. Newspaper reports also claimed to trace white eggs even in Jumla airport, a remote district of the Karnali region. Excerpts from another study conducted by FAO in 2010 (SMDE 2010) referred to the availability and transportation of eggs. Marketing of white eggs is limited to retail markets in district headquarters where they are sold at street based food-stalls and for household consumption of border VDCs in the Terai region. The study found that prices of poultry meat and eggs are lower in India in comparison to Nepal. In 2008, the mean price of broiler eggs in India was around NRs 3 whereas Nepalese brown eggs were around NRs 7 at the consumer level. There was slight variation in the price of Indian eggs across the bordering districts ranging from NRs 2.8 to 4.4. A study related to avian influenza risk management reported that Nepali eggs cost NRs 7.5-8 while white shelled (Indian) eggs were on sale at NRs 4.0 in the market (SMDI, 2009). Likewise, there was a variation in the price of poultry meat. In 2008, price of live broiler (at farm) was NRs 97.2 and dressed meat per kg was NRs 142 (consumer level) which increased to NRs 100 and 150, respectively in 2010 across the bordering states of India. Alternatively, the average price of live and dressed broiler per kg in Nepal was NRs 125 (at farm) and 170 (at consumer level) with some variation in 2008. This increased to NRs 135 and 245 in 2010, respectively.

2.5.2 Feed

It has been challenging to collect information on poultry feed production and imports, more specifically, information about production and import statistics of different feed ingredients. There are 111 feed manufacturing industries operating at present located in the 21 districts of the country¹⁶. The districts and the respective numbers of feed manufacturers are: Kathmandu (22), Kaski (17), Chitwan (16), Rupandehi (13), Bhaktapur (8), Lalitpur (6), Dang (4), Kavre (4), Banke (3), Dhading (2), Parsa (2), Nawalparasi (2) and Bara (2). The districts of Sunsari, Siraha, Kailali, Nuwakot, Tanahun, Kapilvastu and Sarlahi each have one. Total feed production from those industries was 581 132 tonnes in 2009/10 and 646 845 tonnes in 2010/11, thus an 11% increase from the previous year.

Poultry feed has a turnover value of about Rs. 24.6 billion per year¹⁷ (NRs 38 per Kg.). The combined market size of poultry, fish and cattle feed is NRs 40-45 billion¹⁸. Nepal exports chicken

¹⁶ Nepal feed/hatchery industries association's Calendar, 2011

¹⁷ Nepal Feed Industry Association Brochure 2011

feed worth Rs 300 million to Rs 350 million," according to the director of Pro Bio-Tech Industries, the largest Nepali chicken feed producer under the Shakti brand.

As per the official figures of 2006 to 2010, Nepal has been able to completely fulfill domestic demand of wheat bran, rice polish and limestone¹⁹. Import of soya cake had the greatest importance among all feed ingredients which increased every year from 2006 to 2010 except in 2007 (Table 5). Sunflower cake also saw rapid increase of import followed by bone meal and fish meal.

Domestic supply of soya cake, sesame cake, bone meal and fish meal are unavailable or it can be concluded that no such internal formal production exists to contribute to poultry feed. After enforcement of a ban by the GON on the import of poultry related feed ingredients on 08/01/2009, business stakeholders and traders are using informal channels to import feed ingredients either unavailable or inadequate in Nepal.

TABLE 5
Imports (Im) and exports (Ex) of feed ingredients

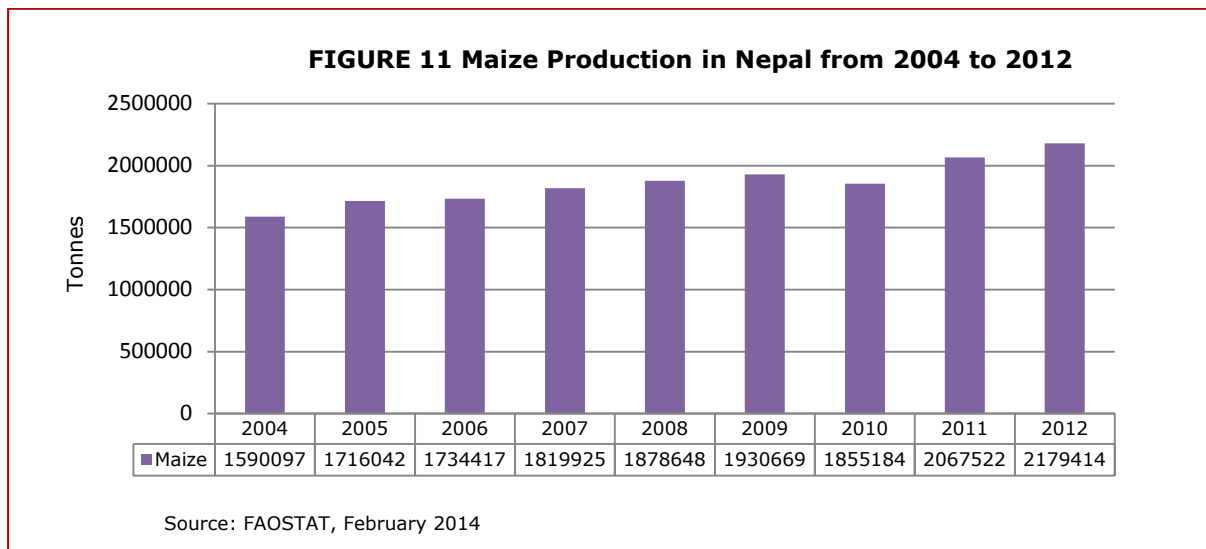
Type	2006		2007		2008		2009		2010	
	Im	Ex	Im	Ex	Im	Ex	Im	Ex	Im	Ex
Soya Cake	39 910	1149	26 145	1149	46 178	0	52180	3606	65 655	5039
Sesame Cake (seed)	232	6	181	7	736	3	825	10	865	2425
Sunflower Cake	1 719	34	3156	39	4 548	105	3726	316	3 514	105
Fish meal	30		351.2		1 098		432		481	
Bone meal	0		2611		1 298		1198		924	
Ani pro	0		115	0	99.5		9.5		23.3	
Total	41 891	1189	32559.2	1195	53957.3	108	58370.5	3932	71462.3	7569

Source: www.faostat.org (For Soya Cake, Sesame Cake and Sunflower Cake) others: Central Animal quarantine office, Kathmandu, 2011/12

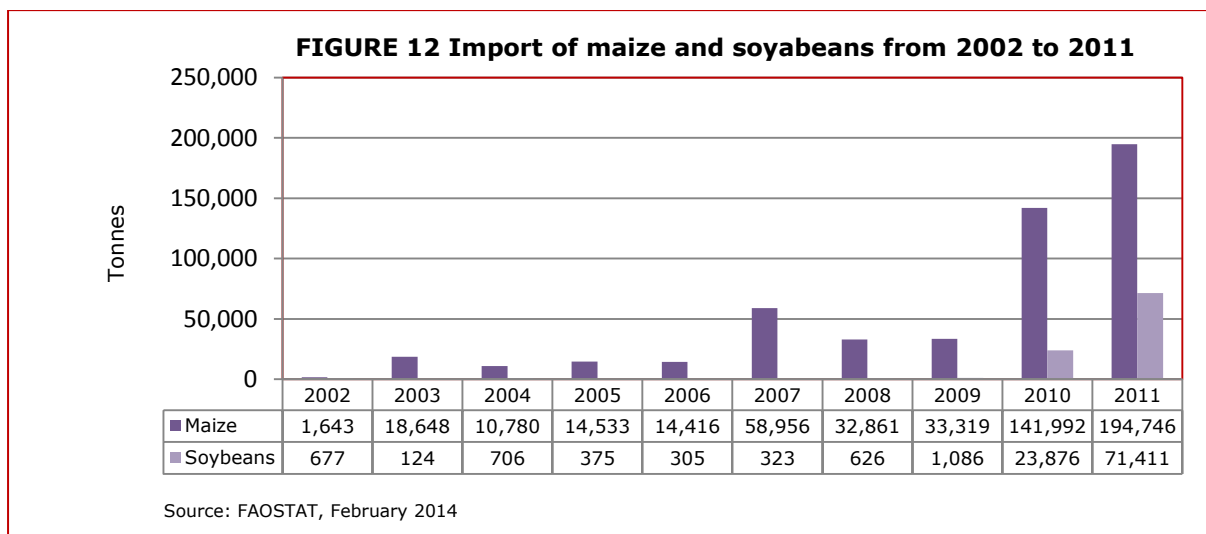
As shown in Figure 11, the production of maize increased from 1 590 097 tonnes in 2004 to 2179414 tonnes in 2012 experiencing a slight decrease in 2010 compared to 2009. The import of maize increased from 1 643 tonnes in 2002 to 194 746 tonnes in 2011 (Figure 12). However the exact requirements of maize for poultry feed and human consumption are not known due to lack of sufficient data. In the years 2009/10 and 2010/11, 348 679 and 388 107 tonnes of maize were utilized, respectively in poultry feed production.

¹⁸ http://www.nimbusnepal.com/script/news/news_detail/id-46

¹⁹ <http://faostat.fao.org/>



The import of soybeans ranged from 677 tonnes in 2002 to 71 411 tonnes in 2011. However, import of soybean cake was 48 020 (2003), 26 258 (2004), 28 000 (2006), 26 145 (2007) and 46178 (2008) tonnes. For producing poultry feed 58 113 and 64 684 tonnes of soybean cake were used in 2009/10 and 2010/11, respectively (calculated based on the proportion of soya cake (10%) used in poultry feed)



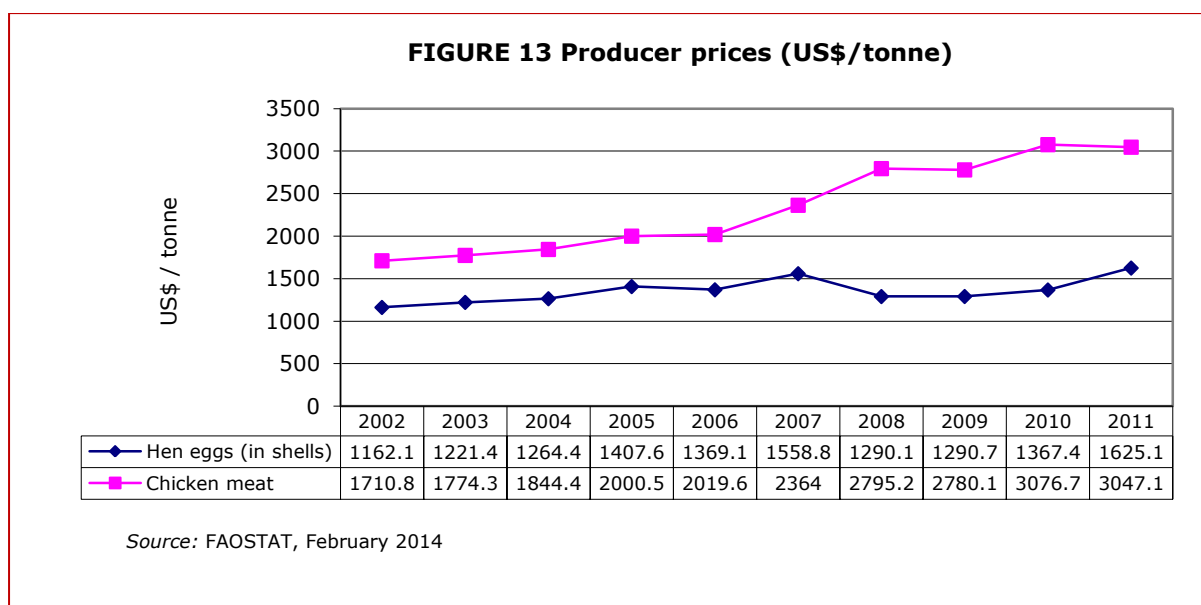
2.6 Prices

Producer prices

From a value chain study in five districts (SMDI, 2009) it was found that around 60 percent of farm-produced broiler chickens was marketed through wholesalers while 24 percent went direct to slaughterers and 16 percent to institutional and individual consumers. With respect to village-produced chickens these were found to be normally collected by traders who passed from house to house and village to village, often on bicycles, for supply to wholesalers and slaughterers. Data from the FAOSTAT database pertaining to producer price of chicken and hen eggs in shell is provided in the Figure 13.

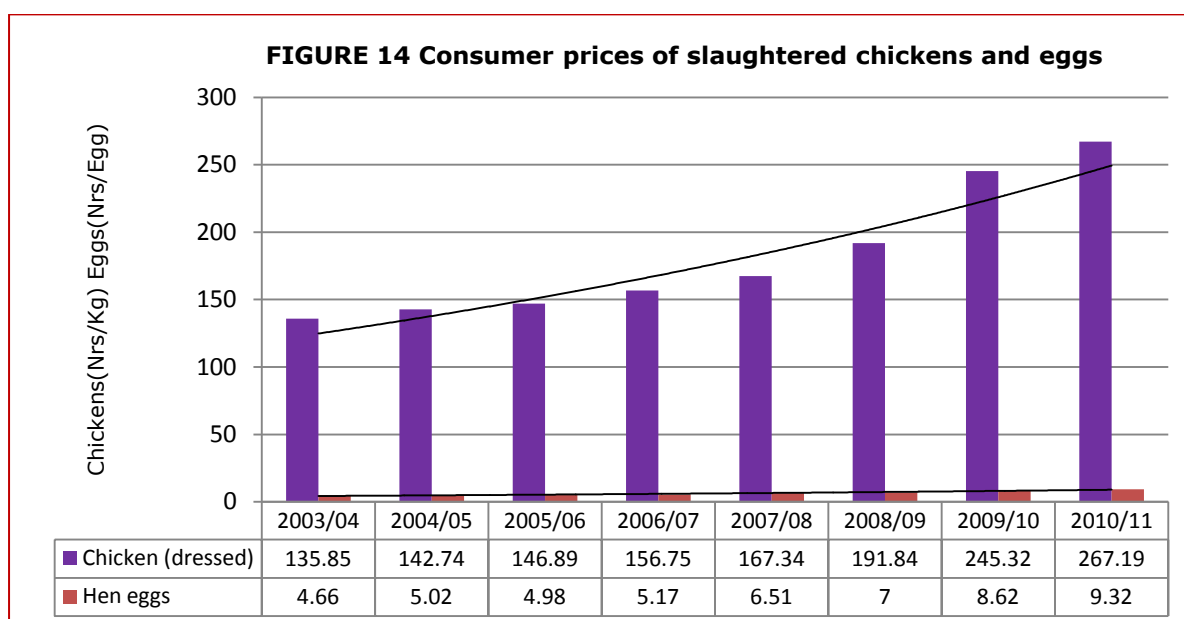
The producer price of chicken meat increased from 1 710.8 USD/tonne in 2002 to 3 047.1 USD/tonne in 2011, an increment of 78 percent in a time span of nine years. Likewise, the producer price of hen eggs in shell increased from 1 162.1 USD/tonne in 2002 to 1625.1

USD/tonne in 2011, an increment of 40 percent during that period. In that period the producer prices for hen eggs in shell decreased in the years 2006, and 2008.



Consumer prices

As depicted in Figure 14, the average consumer price per kg of dressed chicken ranged from NRs 135.85 in the fiscal year 2003/04 to NRs. 267.19 in 2010/11. This was a price increase of 96.7 percent during this period. A major contributing factor for this development was the increase in cost of day old chicks (NRs 35 to NRs 80) and feed (from NRs 18 to NRs 38). Expanding urban population, income growth, high economic growth in China and India, hike in petroleum products and increase in transportation cost also contributed to some extent.



Source: Agribusiness Promotion and Market Development Directorate 2010/11

The consumer price for hen eggs was NRs 4.66 in 2003/04 that increased to NRs 9.32 in 2010/11. No decrease in price was recorded throughout the time except in 2005/06. Data were modeled using exponential trend line. Price of day old chicks and feed cost both influenced the price

Chapter 3

Poultry production systems

TABLE 6
FAO classification of poultry production systems

Sectors (FAO/definition)	Poultry production systems			
	Industrial and integrated	Commercial		Village or backyard
		Bio-security		
		High	Low	
Sector 1	Sector 2	Sector 3	Sector 4	
Biosecurity	High	Mod-High	Low	Low
Market outputs	Export and urban	Urban/rural	Live urban/rural	Rural/urban
Dependence on market for inputs	High	High	High	Low
Dependence on goods roads	High	High	High	Low
Location	Near capital and major cities	Near capital and major cities	Smaller towns and rural areas	Everywhere. Dominates in remote areas
Birds kept	Indoors	Indoors	Indoors/Part-time outdoors	Out most of the day
Shed	Closed	Closed	Closed/Open	Open
Contact with other chickens	None	None	Yes	Yes
Contact with ducks	None	None	Yes	Yes
Contact with other domestic birds	None	None	Yes	Yes
Contact with wildlife	None	None	Yes	Yes
Veterinary service	Own Veterinarian	Pays for veterinary service	Pays for veterinary service	Irregular, depends on govt vet service
Source of medicine and vaccine	Market	Market	Market	Government and market
Source of technical information	Company and associates	Sellers of inputs	Sellers of inputs	Government extension service
Source of finance	Banks and own	Banks and own	Banks and private ²⁰	Private and banks
Breed of poultry	Commercial	Commercial	Commercial	Native
Food security of owner	High	Ok	Ok	From ok to bad

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

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

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

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

²⁰ Money lenders, relatives, friends, etc.

3.1 Background information

Development of Nepal's poultry production could be divided into three distinct periods since its commencement in 1965. The period from 1965 to 1980 was primarily engaged in subsistence production, from 1981 to 2002 the period of commercialization and then onwards the period of competitiveness which is continuing to date.

After six years of government efforts to commercialize poultry farming by establishing a central hatchery, a US funded project produced 1700 New Hampshire day old chicks in 1961, Ratna feed, Kantipur poultry farms and Joshi poultry farms imported hybrid chickens from India and distributed them to poultry farmers in 1964. Achievements were made in producing vaccines against Newcastle disease and fowl pox in the then Central Animal Health Research Laboratory in Tripureshor and in expanding hatcheries in Khumaltar, Pokhara, Tarahara and Nepalgunj. Besides that, there were Government initiated different programs to reduce poverty through distributing day old chicks at a subsidized rate to the targeted households in different districts with special focus on the Far Western Development Region (Kayastha, 2010).

Avinash Hatchery was the pioneer in the production of broiler and layer chickens for commercial production in Chitwan, the poultry pocket of Nepal. Then in 1993, a group named Pancha Ratna started to commercially produce broiler chicken in Chitwan. Till now, several other companies have started to invest in feed, hatchery and broiler production. Some of other big and established names are Nimbus, Rungta, Well-up, Triveni, Sagar and Valley feed industries. Besides that, there have been different programs supported by Government and NGOs to motivate people in rearing poultry. The total number of commercial farms registered in Nepal till 2008 was 1500. However, small numbers of them are still unregistered. Large numbers of commercial farms are established mainly around and in the outskirts of urban areas, most of them in Chitwan, Kathmandu, Pokhara and Biragnagar.

Ratna feed, Kantipur poultry farms and Joshi poultry farms imported layers in 1964. This was the first time in the history of the country when commercial production of eggs using improved breeds took place. After 21 years, a rural poultry development program was started as part of Government efforts for distributing dual purpose breeds of chickens. The annual production of dual purpose day old chicks is 91 000²¹. There are around 200 registered layer farms throughout the country with a flock size ranging from 200 to 250 000.

A paucity of available data complicates classification of Nepal's poultry production systems following the FAO classification relating to bio-security levels and in Nepal classification is usually more related to farm size and is grouped into the following categories (Dhaubhadel, 1992).

- i) Scavenging system
- ii) Semi-scavenging
- iii) Intensive

3.2 Industrial and integrated production

See chapter 3.5

3.3 Sector 2 and 3, other commercial production system

3.3.1 Breeding stock and hatching eggs

In Nepal there are 98²² hatcheries located in 21 districts as compiled and reported in 2010/11 but there are no grandparent farms to date. Locations with high concentration of hatcheries are Chitwan (42), Kathmandu (16), Bhaktapur (8), Rupandehi (6) Kaski (3), Lalitpur (3), Kavre (3), Morang (3) and Dang (2). Similarly, the other twelve districts namely Sunsari, Kapilvastu, Rautahat, Sarlahi, Parnat, Banke, Nawalparasi, Parsa, Siraha, Dhading and Kailali contain one

²¹ Poultry development farm, Khajuro, Banke, 2010

²² Nepal feed/hatchery industries association's calendar, 2010/11

hatchery each. Among them, 72 hatcheries produce broiler day old chicks and the others layer day old chicks.

The broiler and layer chicken market has grown by 18 and 17 percent, respectively in 2009/10 compared to the previous year and domestic demand is around 0.2 million to 0.25 million chickens per day.²³

As derived from the compiled annual technical reports of Central Animal Quarantine Office, Budhanilkantha- Kathmandu the share of broilers among the parent stocks was 95.9% in 2005/06, 97.4% in 2006/07, 92% in 2007/08, 79.7% in 2008/09, and 96.96% in 2009/10, 93.12% in 2010/11 and 90.26% in 2011/12.

3.3.2 Broiler and layer production

The total number of commercial farms registered in Nepal till 2008 was about 1500. Regarding the structure of farms there is lack of data representing the whole country but the Table 7 can give an idea based on a study in 16 districts out of the 75 existing districts in the country. Most of the districts covered were areas of poultry concentration thus the information might not be representative for the whole country. The Table 7 indicates that more than 71 percent of farms hold less than 500 birds in terms of broilers and 50 percent layer farms have less than 1000 birds.

TABLE 7
Proportion of broiler and layer farms according to size in 16 districts

Size of farm	% of broiler farms	% of layer farms
<250	33.30 %	6%
250-500	37.43%	20.05%
500-1000	14.40%	25%
1000-2000	8.83%	24.74%
2000-5000	5.06%	13.02%
5000-10000	0.85%	7.29%
>10000	0.13%	3.91%

Source: SMDE, 2010

3.3.3 Other species

For information about ducks, pigeons, quail and other species see other chapters.

3.4 Village or backyard production

Rural poultry involves all species of poultry that are raised in small number in the scavenging or backyard system, by mobilizing all sorts of inputs from the farmhouse itself. Around 51.9 percent of households are involved in this activity; the largest proportion of households keeping poultry are found in the Hills (67.8%) followed by Mountain (56.4%) and Terai regions of Nepal (Parajuli, 2008). The average holding size is five birds per household, but it varies from two to twenty birds. According to the reports of MoAC (MoAD), 90 percent of the households keeping poultry have local chickens in the scavenging system. On the basis of available statistics, local chickens contribute 93946000 eggs and 2017 tonnes of meat, which is about 16 percent of the total eggs and 13.5 percent of chicken meat production in the country (Parajuli, 2008).

One can further divide the village production into two sub systems.

3.4.1 Scavenging system

Nepalese farmers are rearing chickens and ducks since time unknown. They keep a few birds (3-10 adults per flock) under the scavenging system which is giving them an extra income in the form of meat and egg sales and partly serves for their own domestic consumption. Because of the small flock size, farmers have no problem taking care of the birds. It is believed that among poorest

²³ www.myrepublica.com

household more eggs are sold than used for consumption to fulfill their emergency cash requirements.

It is estimated that over 1 594 400 households are rearing poultry birds (CBS, 2004) which represents around 47.4 percent of total households in Nepal. Around 55 percent of the total poultry population including ducks is kept under this system. According to World Bank statistics there is much less inequality in terms of distribution of poultry in comparison to land and cattle. Inequality as measured by Gini Coefficient was in 2001 0.544²⁴ for land distribution and 0.526 for livestock²⁵.

Native domestic fowl (*Gallus domesticus*) is the predominant species under this system. The chickens are kept with a low level of inputs, housing, and feeding, and disease control. In this system, egg production is around 40 per year²⁶. The birds as well as the eggs (35gm) are of small size and the growth of the birds is slow requiring more than six months being ready for slaughter. The main sources of feed are various types of insects and feeds that are found in the surroundings. However, birds are also supplemented by kitchen wastes and small quantity of grains that are provided by the owners. The website <http://nfgrcnepal.blogspot.com/> provides some useful information about types of breeds including their description for local breeds like Shakini, Ghanti Khuile, Puwankh Ulte etc. In addition to these the American New Hampshire and Australian Black Australorp breeds are frequently found in the Mid and Far-Western development region which are distributed by the Government owned hatchery in Banke. Those introduced two breeds are very popular among farmers because they give good output in terms of eggs and meat.

3.4.2 Semi-scavenging system:

The Government operates two farms with hatcheries as part of its poverty alleviation strategy in Khajurao, Banke and Simara Bara districts which are supplying chickens directly to poor farmers. The government initiated this programme to ensure adequate nutritional supply of needy households. The Khajurao farm is currently producing two breeds, New Hampshire (81 900 per year) and Black Australorp (9 100 per year). Altogether, 10 percent (9100) are distributed directly to backyard farmers of the district and the rest is distributed to another 15 districts of the Mid-western and Far-western region of the country. Another farm of Parbanipur, Simara produced 6534 Giriraj and 2906 New Hampshire breed of chickens and also 361 Turkey and 4938 Quail. The farm distributed in the year 2011/12 a total of 3337 Giriraj, 925 New Hampshire, 56 Turkey and 433 Quail to the small farmers of the adjoining districts; Bara, Parsa, Rautahat, Makawanpur, Sarlahi (personal communication).

It is somehow difficult to clearly distinguish between scavenging and semi-scavenging systems because feeding, scavenging and rearing patterns are similar in both except that in the semi-scavenging system a shed is provided inside or outside the house, feed is regularly provided and health checkups and medicines are applied. Often households with flock sizes of above 20 birds have built separate housing facilities. Moreover, some households are self-reliant in producing day old chicks through broody hens.

3.4.3 Ducks

Ducks are kept in a traditional scavenging system and no commercial farming of ducks exists at present. Duck keeping practices can be categorized in two ways on the basis of the presence or absence of large water bodies. The ducks are raised together with indigenous fowls and livestock in the Terai districts, primarily in eastern Terai. Unlike in other countries, duck raising practices associated with rice paddy fields is not important in Nepal. The prime purpose of duck farming is for domestic consumption of meat and eggs along with its contribution to generating emergency cash to fulfill household requirement. Rural people have been encouraged to take up duck-raising as a source of additional protein and income and, in the case of fish farmers, in helping to produce more fish, through the nutrient supply from duck manure to the fish ponds.

Ducks are also reared for religious and cultural significance. Every Tharu, member of an indigenous caste, rears ducks as it is necessary to offer ducks and duck eggs to gods, goddesses and in the festivals throughout the year. Besides that there are other groups (Newars) that offer duck eggs during Dashain and Tihar; which are important Hindu festivals.

²⁴ <http://www.ngofederation.org>

²⁵ Annual World Bank conference on Development Economics, 2005

²⁶ <http://nfgrcnepal.blogspot.com/>

Rapid urbanization and migration trends in cities and towns have limited the availability of water bodies and this in turn is influencing the decrease in households raising ducks and duck flock size. The absence of water bodies has a strong influence on the duck production system. The duck population was largely stagnant over the last seven years and as reported by GON statistics is now getting smaller.

Tracing back the history of improved duck farming, Peking ducks were introduced as a gift from the Government of Hungary to Nepal in 1970. This pure strain was bred at the Hetauda fish farm and the ducklings sold to local people. In 1974, Peking ducklings were sent to the Fisheries Development Centres in Bhairawa and Pokhara, where eggs were subsequently distributed to villages for incubation by broody hens. In April 1975, the New Zealand Freedom from Hunger Campaign Action for Development Committee, through the FAO Regional Office in Bangkok donated 1 200 fertilized eggs of Ng Chow duck, a cross between Peking and local Hong Kong ducks, from Hong Kong to Nepal (FAO, 1979). There was one commercial duck farm in Bhairahawa which is now closed as informed by concerned authorities.

Case study 1

A success story: Challenge overcome

This is an encouraging and incredible story of an illiterate but dedicated and disciplined woman, Uma Sapkota, who changed her living standard by poultry farming.

She lives in Amilia, ward no. 12 of Ratna Nagar Municipality, Chitwan. Before she began poultry farming, her husband was the only one to support her seven members family. She established a small poultry farm of 150 broilers and 100 layers to sustain her livelihood in 1990 and increased the capacity of her farm to 6000 broiler in 1993. She named her enterprise, Trishul Integrated Poultry Farm.

She became a dealer in broiler chickens and a supplier of poultry feed and her confidence grew further after she was trained as a vaccinator. She diversified her business by starting a meat shop in Chitwan district and bought a vehicle that was necessary for her work as a poultry collector and wholesaler. Later she acquired a second vehicle and for this she needed to take out a loan guaranteed against her neighbor's property as she herself did not have sufficient property to meet the bank's collateral demands. She recalls those hard days.

Her business experienced significant growth with sale of live broilers from 20 to 30 quintals (100kg) per day and dressed meat from 15-20 quintals per day. At that time, daily transaction from her shop ranged from NRs 387,000 to 548,000. Quite unexpectedly, she suffered a loss of NRs 1 700 000.00 when rumors of bird flu were spreading all over. She recovered from this setback and bought land with cash in hand and using credit, and built a shed with a capacity of 9000 layer birds. Thanks should be due for support by the Abinash hatchery for having faith in her to supply those birds fully on credit. Her family backed her through thick and thin times. The reason for shifting to layers was that the meat price is more vulnerable to extreme condition than the layer eggs.

Now, her farm holds 27 000 layers with egg production around 80-95 percent and cash collection of NRs 133 920 to 159 030 per day. She started preparing poultry feed that is required for her farm in her own establishment with technical support from a subject matter expert. She managed to sell culled live birds at NRs 77/Kg/bird in normal time and at NRs 115/kg/bird in times of high demand.

She helped her elder son to establish a meat shop in another district and her younger son with a poultry farm with 14 000 layers in Chitwan and who is in the process of expansion with financing of NRs 20 million from banks. Her daughters, both elder and younger could not remain otherwise, thereafter starting their own poultry farms with 20 000 layers and 12 000 layers respectively.

She was honored by Kalika FM and became a glaring example of a successful women entrepreneur. Many aspiring visitors go to her premise to get inspiration and benefit from her technical know-know. She credits her courage, confidence, labor and honesty as the prime reasons paving her way to her present success. However, she also did not forget to mention her family for being there for her now and then.

Case study 2

Hard works pays

Mr. Khem bahadur Limbu from Thakwara VDC of Tehrathum had not many options for livelihood in that remote place. He either had to assist his family to raise livestock and crops or goes down to district headquarter as daily wage laborer or fulfill his dream of going abroad.

He went to Malaysia and worked as a laborer for seven years from 1998 to 2005. Then after, he returned and got married. He again thought of going to Iraq; a lucrative destination for better earning opportunity though risky and paid NRS 250 000 (USD 4000) in advance to an agent. The agent could not send him there and he faced a lot of problems in recovering that money. He could not think further ways of earning and remained wandering in the streets of Kathmandu, the capital of Nepal.

He shared his problems with Buddhi Tamang, who was a working mate in Malaysia. He suggested him to start poultry farming. He narrated the success story of his father in law who owned a poultry farm in Kapan, in the north-eastern part of the Kathmandu metropolitan. Moreover, he also described poultry demand and supply statistics in the city and told him that one could earn here even more than in Malaysia. They started looking for empty sheds after one friend of Buddhi Tamang also expressed willingness to join hands.

At last, they located a shed with 1800 capacity the owner of which had to left poultry farming after incurring a huge loss. Neighbors were surprised to see their determination to revive the unfortunate (cursed) shed. They kept a first batch of 1000 day old chicks in July 2005 after depositing NRS 120 000 to valley cold store, one of the biggest suppliers at the rate of NRs 12000 per 100 chicks including feed. Mr. Bidari, an experienced poultry farmer and the previous owner of the shed, guided them to raise the chicks in the beginning. Even though, they bore a loss of NRs. 15 000, it encouraged them to keep more birds. They brought 2 000 day old chicks in October and the net profit of the second lot ticked around NRs. 175 000. They again brooded 2400 day old chicks. Though the mortality rate was high (12%), they still managed a handsome profit of NRs. 165 000. To expand their farming, they leased 3 ropani of land to construct their own poultry sheds at around NRs 280 000 to keep additional birds. They then started brooding 4 000 day old chicks and opened their own outlet the Nuhamra ("good" in Nepali) cold store, to supply dressed chickens in Sano Bharang. This way they increased their profit.

Both of the partners agreed to work separately with NRs. 600 000 in their share for each. He rented 7 ropanies (about 0.4 hectare) of land, constructed poultry shed of 4 000 chicks. Besides that, he built a temporary house for his family (himself, wife and a daughter). He hired one assistant at NRs 5 000 per month.

He is marketing the broiler at an age of 40 to 45 days with an average weight of 2.6 kg and mortality is below 10%. His profit per batch is NRs. 300 000. He is also utilizing his rented land for organic vegetable farming and earning 10 to 15 thousand per year. It is enough to support his daughter's schooling. He has bought one motorbike with this income and is living happily with his family.

Case study 3

Enterprise set up to fulfill nutritional requirement

Govinda Prasad Dangol, proprietor of D.G. Poultry, started poultry production with 13 chicks in a box motivated by a need to fulfill his extra nutrient requirement as a body builder in 1967. He got this idea after learning that chickens were a good and cheap source of nutritious food. With the support of his family members, he started commercial farming with 300 layers and in Nayabazaar with additional 1 000 layers after finding that the business was profitable. He used to prepare poultry feed himself after studying the relevant resource materials. Later he moved to a new rented shed keeping 2 000-2 500 layers.

Dangol's family also kept 200 broiler chicks to meet their growing interest in 1974, and later focused on broilers only. Their initial flock size was 3 000-3 500. They marketed the birds at Chhetrapati and Nagal. They initially felt very challenged and discouraged as people commented that broilers were "poultry of bad odor". To their relief they got the opportunity to supply broiler meat to Soaltee Hotel in 1979. Their business experienced significant growth and a shortage of DOC supply stimulated them to enter into the hatchery business. But due to a lack of electricity, this dream took time to be realized. They developed additional infrastructure in Dharke and kept 5 000-10 000 broiler DOC in 1985. In the beginning, they produced 10-12 thousand chicks per week and expanded to 20-25 thousand in 1991. Due to competition among private hatcheries, they were motivated to establish their own commercial farm in Chitwan in 1998 and kept 200 000 birds by 2001. Simultaneously, they established two hatcheries in Dharke and Chitwan of 10 000 capacities each.

They diversified their business by starting their own meat shops and slaughtering place in Katmandu Valley in 2004. They began to manufacture feed with expert consultation after collecting raw materials from India. Their daily sales were around 6 000 Kg of meat during 2002-2007. Due to marketing problem, reduction in profit margin and threats of HPAI, they converted their broiler farms to parent stock farms leaving all other parts of business behind.

They are presently importing Hubbard parent chicks from Italy, France and Russia and have plans to keep 70 000 parent birds by 2011 in batches of 14 000 each.

3.5 Poultry value chain analysis

There are two value chain studies carried out to date about poultry production in Nepal. One focused on cross border trade (SMDI, 2009) and aimed at estimating volumes, prices, values, actors involved for a wide range of poultry commodities which, despite the ban on such trade, were entering illegally. A later study (SEEPOR, 2010) analyzed information on the internal value chains and examined trade flows, pricing and other core indicators. Although neither study covered the whole country, as they targeted only the principal trading routes they were able to provide an insight into the overall practices followed in the country.

Government statistics show that the poultry industry contributes 3-4 percent of the total GDP in Nepal. The poultry industry is one of the rapidly commercializing industries in Nepal even though backyard poultry is still common. There is an investment of NRs. 22 billion in the poultry industry which provides direct employment for 70 000 people and indirect employment for thousands more. Daily transactions amount to NRs. 40 million with production of nearly 150 000 kg poultry meat per day (Stop AI – DAI/Winrock/IDE, 2008).

3.5.1 Day old chicks

There is no practice of separating the hatching of eggs from rearing parent stock in separate establishments as is normal in other countries. Both activities are executed within one establishment.

For the semi-scavenging system, day old chicks come from government owned poultry farms in Banke, Pakhribas, Simara and a private owned Hatchery (Desar) in Bhairahawa. Besides that, hawkers are selling "Kuroilers", Giriraj and Lohatan type of chickens, illegally imported from India by visiting every household on bicycles. That practice is more prevalent in many Terai districts.

The commercial poultry farms are supported by 98 hatcheries distributed unevenly throughout the country. Hatcheries import parent stocks from Australia, the Netherlands, Germany, the United

Kingdom, the Philippines, Malaysia, Sri Lanka and Belgium. Details of import of broiler and layers parent stocks with respect to country of origin and breed are presented the Tables 8, 9, 10 and 11.

TABLE 8
Imports of broiler parent chicks by country of origin

Exporting country	Female	Male	Total
Australia	40 104	5 587	45 691
France	5 200	780	5 980
India	37 765	6 575	44 340
Malaysia	575 760	61 046	436 806
New Zealand	18 000	2 930	20 930
Philippines	127 744	20 701	148 445
Poland	10 400	1 560	11 960
Sri Lanka	21 840	3 150	24 990
Thailand	210 259	31 318	241 577
UK	4 160	624	4 784
Total	851 232	134 271	985 503

Source: Central Animal Quarantine Office, 2011/2012

TABLE 9
Imports of broiler parent chicks by breed

Breed	Female	Male	Total
AA Plus S	10 360	1 554	11 914
Cobb 100, 500	750 667	119 004	869 671
Hubbard	19 760	2 964	22 724
Indian river	14 960	2 083	17 043
LIR	4 680	675	5 355
Marshal R Plus	2 080	312	2 392
Ross 308	18 944	2 574	21 518
Vencobb 100, 500	29 781	5 105	34 886
Total	851 232	134 271	985 503

Source: Central Animal Quarantine Office, 2011/2012

TABLE 10
Imports of layer parent chicks by country of origin

Exporting country	Female	Male	Total
Germany	42 136	5 424	47 560
Czech Republic	1 700	300	2 000
UK	29 940	4 491	34 431
Hungary	5 000	600	5 600
France	12 250	1867	14 117
Netherland	3 640	546	4 186
Total	94 666	13 228	107 894

Source: Central Animal Quarantine Office, 2011/2012

TABLE 11
Imports of layer parent chicks by breed

Breed	Female	Male	Total
Lohman Brown Classic	33 608	4 272	37 880
H & N Brown Nick	8 528	1 152	9 680
Dominant CZ	1 700	300	2 000
Hy Line	23 700	3 555	27 255
Hubbard	6 240	936	7 176
Tetra SL	5 000	600	5 600
Hisex brown	8 400	1 234	9 634
Novogen Brown	7 490	1 179	8 669
Total	94 666	13 228	107 849

Source: Central Animal Quarantine Office, 2011/2012

Some of the findings drawn from the cross-border value chain study revealed the following problems in Nepalese poultry industry (Stop AI – DAI/Winrock/IDE, 2008):

Eggs were not graded. Hatcheries used a number of disinfectants to clean incubators at regular intervals. The farm premises however were not clean and they did not have any regular routines of disinfection. A study on value chain mapping of Avian Influenza across Indo-Nepal border districts (SMDI, 2009), identified evidence of illegal imports of hatching eggs by one hatchery. Several complaints were lodged by poultry entrepreneurs about the mixing of Nepalese day old chicks with Indian chicks and distributing them to farmers. Similarly, after ordering day old chicks long supply delays were also cited by poultry farmers. Likewise, commercial poultry farmers and chick suppliers frequently mentioned supply of inferior quality day old chicks to farmers in some districts. Some rumors also surfaced about hatcheries practicing molting activity frequently. Quality standards were also not fully adopted in all steps of production and distribution in hatcheries.

3.5.2 Chicken meat

The product has to go through several intermediate channels in the value chain to finally reach the final destination in Nepal. The most common channels are set out in the Table 12 based on information compiled from two studies (SMDI, 2009; SEEPOR, 2010). Around 60 percent of poultry is sold by the producers to wholesalers, 24 percent to slaughterers and 16 percent to individual and institutional consumers. There are also a number of middle-men involved in the market chains who take their commissions for arranging sale to wholesalers and slaughterers thus increasing the price of poultry products.

Middle-men, chick and feed suppliers provide credit to farmers and collect grown up chickens and eggs at the rate committed initially. Poultry farmers in that case cannot sell their products

according to their choice but are compelled to sell their poultry to these chick/feed suppliers (buy back policy).

i) Broiler chickens

TABLE 12
Marketing channels for broiler

Farm	→	Consumers						
Farm	→	Slaughterers	→	Consumers				
Farm	→	Wholesale	→	Slaughterers	→	Consumer		
Farm	→	Middleman	→	Wholesale	→	Slaughterers	→	Consumer

According to the cross-border value chain study (SMDI, 2009), 70 percent of the broiler chickens go directly from the farm to wholesalers, followed by 26 percent to slaughterers and 4 percent to consumers. However, the percentage of broilers that are directly sold live to consumers could not be established.

ii) Village poultry

Village chickens are preferred to broiler chickens by certain consumers for their taste. Their demand is very high in comparison to supply as explained below. For village chickens marketing starts with agents acting as collectors making rounds of villages and households to purchase directly from backyard producers. Men on bicycles/collector and village Haat bazaars play important roles for their collection and trade. The study by SMDI (2009) found that during one month around 12 000 village chickens were found illegally entering the country from 10 different routes in Jhapa and Morang districts. However, no evidence of import was recorded in two other districts namely Banke and Parsa. Surprisingly around 75 percent of the imports were later transported to high consumption centers like Kathmandu, Chitwan, Pokhara and Butwal travelling a distance of almost 700 kilometers. Village chickens were probably also coming from other districts to district headquarters and consumption centers. Bicycles were the main mode of transportation. In certain circumstances, people used to use Rikshaws to bring local chickens both live and dressed from Indian markets. The price of village poultry was 1.5 to 3 times higher than that of broilers. Another study (SMDE, 2010) also showed that 68 percent of village chickens were marketed by cycle men/collectors and the remaining 32 percent were purchased by consumers directly from farms.

There is a government mechanism for collection, compilation and publication of the prices of poultry and poultry products. It is noteworthy, that those data are collected from 75 districts of Nepal. However, they are circulated to line agencies only and in limited copies. Due to this, farmers and consumers are not well-informed about prices at regular intervals. A routine and ad-hoc monitoring system of markets in terms of price, supply and demand is still lacking but plans are on the way to publish data on a website. Field observation shows that hatcheries, wholesalers and slaughterers are the pivotal actors in fixing the high prices. Some problems cited during the study of SMDI (2009) are presented in the box below.

- Illegal import of day old chicks.
- Problems with consistent availability of quality and disease free chicks.
- Lack of quality feed and lack of continuous monitoring feed ingredients
- Lack of awareness and training about poultry farming and bio-security related practices.
- Vaccination not effective due to poor quality and storage facility.

A field survey was conducted by the author to assess the causes of dropping out of poultry business in the five major poultry pocket districts, Kathmandu, Bhaktapur, Pokhara, Chitwan and Biratnagar of the country. A questionnaire was developed and a total of 50 persons, ten persons from each district, were interviewed. The study concluded that the high mortality and high input prices were the major causes of dropping out of the poultry business. (Table 13)

TABLE 13

Major causes for dropping out of poultry business

‰*

Input price is higher than output price	53.33
Day old chicks related problems	
-Price was high	16.67
-Timely supply was not available	23.33
-Shortage of capital	13.33
-Adequate quantity was not available	16.67
High mortality of birds	63.33
Low productivity of birds	13.33
Low demand of products in local market	10.00
Move into other business	16.67
Disagreement among family members	10.00
Difficult to sell in distant markets	20.00
Monopoly of big farms	6.67
Shortage of labour	6.67

* Multiple answers

Source: Field survey by Dr. Krishna Bahadur Shrestha, 2010

3.5.3 Table eggs

The wholesale price of table eggs is determined by the Nepal poultry egg producers' association with its head office in Chitwan. The producer price during last 2-3 years was in the range of NRs 180-210 per 30 eggs. By wholesalers/agents 30-45 percent of eggs are marketed from farmers followed by retailer/small grocer (25-30%), sub-collectors (20-30%), local traders (15-25%) and highway food stalls (4-5%) (SMDI, 2009).

TABLE 14

Marketing channels for eggs

Farm	→	Consumers (for backyard most of the cases)
Farm	→	Retailers /Grocery store → Consumers
Farm	→	Wholesale → Local Trade → Consumer
Farm	→	Collector → Wholesale → Local Trader → Retailers → Consumer

The existing challenges and constraints for egg producers extracted from SMDI (2009) are:

- Ample amount of illegal white table eggs import.
- Large price difference in eggs with India.
- Lack of proper monitoring system of egg quality.
- Information system about different level of egg price is missing.

Chapter 4

Trade, marketing and markets

The poultry market in Nepal is highly fragmented due to inadequate transport and communication networks and lack of efficient market related information system. The ready to sell birds and eggs are collected by dealers and feed companies. They are either sold from their counter or given to wholesalers or dealers after manual packing or grading.

4.1 Domestic market

No record of exporting poultry products from Nepal to another country was encountered other than rare incidents to India in negligible quantities (SMDE, 2010). Currently the poultry industry in Nepal is growing towards fulfilling its local demands. That could have been achieved by 2010 but has been set back by the effects of HPAI in Nepal and in neighboring countries. The disease was a massive blow to the growing poultry industry. The poultry market in Nepal is concentrated in highly populated areas and along highways. Besides that, hotels, restaurants, police and military camps, residential colleges or schools and refugee camps and Maoist's camps are their major consumption centers. There are two types of domestic market. One is permanent and another is the temporary Haat-bazaars run weekly or bi-weekly. Weekly Haat-bazaars are dominant and quite popular in the eastern development region associated with high business transactions. Further to the west of the country the haat-bazaars are fewer and less popular.

An inventory of the Haat bazaars found that 85 operate at regular intervals in the eastern Terai, 34 in mid-Terai, 7 in western Terai, 5 in far-western Terai and 23 in the hill regions.²⁷ Most of those Haat bazaars are focused on the transactions of livestock including cows, oxen, male and female buffaloes, and male and female goats. Poultry trade either in small or big numbers also happens at those places. Haat-bazaars happen once or twice per week involving the transaction of hundred rupees to millions. The Jhapa districts has the largest number of haats (36) followed by the Morang (12), Sunsari (12), Saptari (10) and Siraha (8) districts. These Haat-bazaars are either owned and managed by local authorities (VDC/municipality) or private organizations. They have contributed to generating significant revenues, but only a small portion of the income is utilized for maintenance, infrastructure development and management improvement.

Similarly, the poultry value chain study sheds some light on the live bird markets in four Terai districts of Nepal. It mentions 30 permanent live birds markets with heavy concentration of wholesalers (25 trading commercial chickens and 5 village chickens) and slaughterers (more than 200) in Jhapa district. LBMs are located in Birtamod, Chandragadhi/Bhadrapur, Damak/Dhulabari, Surunga, Gauradaha, Budhabare, Kerkha, Charali, Sanischare, Garamuni, Rajghat, Maheshpur and Prithvinagara. Most of these points are collection points of both formal and informal (illegal) trade catering the neighboring and distant districts as well.

Parsa district has a total of 6 such live bird markets namely Birta, Murli, Chhapkaiya, Gandak, Naguwa and Meena Bazaar serving as well as wet markets and are situated in Birgunj Municipality. On an average, 10-40 live birds are sold from each market place either directly to the consumers or through slaughterers to consumers. The varieties of birds sold live include Kuroilers, Lohatans and village chickens. Informal birds imported from India contribute with almost 60 percent to the total broiler trade from these markets.

Rupandehi district has 10 permanent live bird markets and the ratio of informal birds to formal birds found to be very low in comparison to other districts. Butwal Municipality-8, Burmeli tole, Sunauli, Devdaha Bazaar, Murgiya, Manigram, Taamnagar, Sau, Farsatikar and Driver tole are main markets. Mainly slaughterers situated within 2km from the border were found to bring chickens from across the border. Out of 35 temporary markets (Haat-bazaars) 24 were reported to transact primarily Kuroiler and village chickens.

²⁷ Department of Livestock Services, Livestock & Poultry Inventory, 2009/10,

In Banke district, there are 18 markets, namely, Banke Bagiya, Dhamboji Chowk, Dailekh Bangala, Karkado chowk, Ranjha, Hawaldarpur, Chhapargauri, Dhakeri, Sumshergunj, Bankatwa, Khajura, Radhapur, Sitapur, Bhrikutinagar, Phultekra, Kohalpur, Jamunah, Setu Bika Chowk and BP chowk. These markets host live bird wholesalers and slaughterers. Out of the total live bird markets, 8 are located within Nepalgunj Municipality. Slaughterers of these markets located in Setu Bika, Kohalpur and Dhamboji sell on an average 10-60 live birds of broiler daily as well as indigenous breeds (Kuroiler, Lohatan, village chickens, ducks, and pigeons) directly to consumers.

The months with low poultry production and consumption are mid March to mid August while the high poultry season is from August to March, the wedding as well as festival season. The highest consumption months are September to January followed by February, March and July; while April, May and June are low consumption months.

Marketing of broilers is controlled by butchers and cold stores. Kathmandu, Dharan, Butwal and Kaski are the major consumer center for poultry products. Around 2 211 000 birds entered Kathmandu Valley in 2007/08 and 1 715 000 birds in 2008/09 from the Thankot route only, let alone the Valley's own production and entry through other routes (SEEPART, 2010).

Children were seen slaughtering and eviscerating the slaughtered chickens. A study by SMDI (2009) also found that separation of species in live bird markets and at slaughterers was almost negligible in all study districts. Although DLSO personnel were aware of regulations contra-indicating these practices the concerned officers stated that they were powerless in implementing them. It was noted that it was common practice for live birds and dressed carcasses to be on sale at the same site.

As noted above, although information on market prices is gathered and published by government the consumers are generally obliged to pay in excess of these figures due to limited circulation of this publication and weak implementation and enforcement of price regulatory and monitoring mechanism.

In accordance with a study conducted in 16 districts (SEEPART, 2010) farmers or producers received 81 percent of the price paid by the consumer (Table 15). That study reported the NRs 168 for live broiler at farmer level, followed by NRs 179 at slaughter and finally NRs 206 at consumer level. Here dressed bird weight in kg was calculated after deducting 20 percent of live bird weight/kg.

TABLE 15
Value chain and values for live birds from farmer to consumer

Link in the chain	Percentage of price	Price (estimate)- NRs per kg
Farmer	81%	168
Slaughter	86%	179
Consumer	100%	206

However, the study conducted in 2009 by SMDI (2009) showed that farmers received less than 70 percent of the total price paid by the consumer.

TABLE 16
Value chain and values for chicken eggs from farmer to consumer

Link in the chain (estimate)	Percentage of price	Price (estimate)- NRs per kg
Farmer	90%	7
Consumer	100%	7.9

The Table 16 shows that the price of chicken eggs received by poultry farmers was NRs 7 at farm gate as against NRs 7.9 at consumer level (SEEPART, 2010).

4.2 Import

Egg imports are banned, but imports of day old chicks for parent farms is permitted but only through Tribhuvan International Airport in Kathmandu, and there is ample evidence of illegal imports of day old broiler chicks, white table eggs, broiler and village live birds and poultry meat both broiler and local in districts bordering with India. Some of them were found to be transported to other districts traveling distances of more than 700 Km (village chickens). Proofs of hatching egg imports from India were found in one of the five study districts in 2008 (SMDI, 2009).

The Government of Nepal has prohibited the import of poultry related products like feed, feed ingredients, utensils and machinery from India. Due to unavailability of input materials (soya cake, sesame cake, bone meal, fish meal and maize) as well as utensils and machinery, traders are continuously importing through informal channels.

4.3 Export

There is no export due to the fact that domestic production is yet to fulfill country demand and cost of production is higher in Nepal than in India limiting the scope of exports to India. No evidence of exports to the northern neighbour China has been recorded yet. However, rare incidents of poultry exports to India were notified by concerned stakeholders.

4.4 Slaughtering facilities

Birds are either killed or slaughtered in the market or they may be brought home by the buyer to be slaughtered at home. There is no disposal mechanism for waste material in any of the locations, thus causing serious health hazards. In the villages the slaughter of birds takes place in households or in village Haats, temporary markets run weekly or biweekly invariably in the open air²⁸.

Observation carried out in two districts indicated that at each average sized bird market, 10-40 live birds are sold daily directly or through slaughterers to consumers (SMDE, 2010). There are about 18 live bird markets in Banke followed by Jhapa (15) Rupandehi (10) and Parsa (6). Besides that, there were also found 24 Haat-bazaars in Rupandehi and 20 in Jhapa where live birds of different species were sold.

At present, 3 slaughterhouses and 18 commercial meat processors are registered by the Department of Livestock Services (annual progress report 2008/09). All of those commercial processors are located within the Kathmandu Valley. The Government initiated plans to open up slaughtering facilities in Hetauda, Itahari and Thankot and the former two were set up and are in operation. Only buffalo, pigs and goats are slaughtered there but no poultry. Private sector operators have plans to open modern slaughter houses for poultry.

With the financial support from CLDP, Valley Cold Store is installing a semi-automated poultry slaughter house in the premises of Balaju Industrial Area, Kathmandu.

²⁸ SMDI (2009)

Chapter 5

Breeds

The different poultry production system in Nepal use different poultry breeds or breed combinations.

5.1 Exotic breed

The commercial system: The commercial breeds of broiler poultry include Cobb 100, Cobb 500, Venn Cobb, Cobb Avian, Lohman Indian River, Hubbard Flex, Ross-308, Kasila, Hyline brown. Lohman brown, H&N Nick brown, Bovans brown, B.V. 380, Isa brown, Dominant CZ and Hisex brown are the major layers breeds. They are reared under more intensive management systems with adequate housing, nutrition and health control.

Semi-scavenging system: The system is adaptable to a range of flock sizes and is capable of producing a larger number of eggs compared to the scavenging system, if supplementary feed is provided. The system is developed for poor households with dual purpose production (egg and meat). It is an alternative to the use of the commercial systems using breeds which are developed through crossing different exotic and local breeds. Australorp, New Hampshire and Giriraj breeds produced by two government-owned and other private owned hatcheries are supplied to poorer and general households at subsidized market rates, respectively. No studies have so far have been carried out to understand the productivity of these crosses in terms of egg and meat production and in relation to feed supplements provided in Nepal. This system implies that the birds are let loose to roam freely for part of the day but, at night, they are confined and supplemented with extra feed. It requires the construction of a small house depending upon the size of the flock. The house is generally of low cost, constructed on the verandah or separately-erected and made from local materials like bamboo and thatch. A number of factors may be responsible for the fact that farmers in village committees adopt this system. The chickens can be protected from inclement weather and can also be protected from predators by confining them up when family members are engaged in activities away from the home. Farmers can also collect the manure with a view to maintaining soil fertility in areas where the use of chemical fertilizers is not practicable. This is a relatively new system, and only a small number of farmers have adopted it to date.

5.2 Local breeds²⁹

The native breeds of poultry are hardy in nature, suitable for scavenging and are dual purpose, with high meat quality. The different local breeds include Sakini, Ghanti Khuile and Puwakh ulte (Dumse). The Sakini breed of poultry is a small in body size, has different feather colour, and is hardy in nature. The egg production capacity is 70 to 80 /year. The average adult body weight is 1.5 to 2.0 kg. Similarly, the Ghanti Khuile breed of poultry is a typical bird with few feathers in neck, different feather colour, hardy in nature, noted for delicacy of meat. The egg production capacity is 60 to 80 /year. The average adult body weight of male is 1.6 and female is 1.30 kg. Likewise, Puwankh Ulte breed of poultry is a typical bird with outward growth of the feathers. The average adult body weight of male is 1.0 and female is 0.9 kg.

²⁹ http://nfgrcnepal.blogspot.it/2007/07/livestock-based-livelihoods-in-nepal_14.html

Chapter 6

Veterinary health, public health and bio-security measures

The Department of Livestock Services under the Ministry of Agriculture and Cooperatives is the organization that addresses veterinary issues in Nepal.

There are four directorates within the Department of Livestock Services namely Directorate of Animal Health, Directorate of Livestock Production, Directorate of Livestock and Poultry Market Promotion and Directorate of Livestock Extension and Training. Each directorate is headed by a Program Director with the following functions and responsibilities.

- **Directorate of Animal Health:** Work as the National veterinary authority in the concerned field, develop and implement control and eradication program for important livestock diseases, set standard, norms, and develop monitoring system to improve quality of veterinary services, provide national animal health data and information to OIE and other international agencies, coordinate technical aspects of veterinary services with national and international organizations.

The Central Animal Disease Investigation Laboratories with five Regional laboratories and one National Avian Laboratory, Central Animal Quarantine Office with eight animal quarantine offices and 24 quarantine check-posts, the Central Veterinary Hospital, Central Biological Production Laboratory, Veterinary Epidemiology Center, National FMD and TADs Laboratory, Veterinary Standards and Drugs Administration Office, Veterinary Public Health Office and Central Rabies Vaccine Production Laboratory are under its responsibility.

- **Directorate of Livestock Production:** Work as the focal technical authority for the subject matters concerned, and be responsible to prepare national policies, strategy, plans and annual programs related with livestock and poultry production; standardize livestock, livestock products and livestock production equipments in terms of quality and monitor, control, promote and manage them.

The National Livestock Breeding Center, National Pasture and Livestock Feed Development Center, Central Sheep and Goat Promotion Office, Central Pig and Poultry Promotion Office, Livestock Quality Management Laboratory, Central Cattle and Buffalo Promotion Office, Poultry Development Farms and six Livestock Development Farms are under its responsibility.

- **Directorate of Livestock and Poultry Market promotion:** Work as the technical authority for the subject matter concerned and be responsible to engage in trade promotion programs both domestic and international and planning, marketing and development of livestock and livestock products, disseminate and update statistics and information, supervision of LBMs, slaughter slabs/slaughter house and hat bazaars.

- **Directorate of Livestock Extension and Training:** Work as the technical authority in the concerned field, organize training, workshops, prepare communication materials, provide assistance/technical consultation to livestock service programs carried out by farmer/s groups/institutions at different capacity and contribute towards their individual/institutional development.

Five regional livestock training centers are under this directorate.

Additionally, there are five Regional Directorates of Livestock Services, 75 District Livestock Services Offices and 999 Livestock Service and Sub-Service Centers.

The number of approved posts in the Department of Livestock Services is 4 050. Among them, 38 percent (1 790) are allocated for administrative work and the others are livestock professionals (2260), of which 2 156 are working at present. The Table 13 shows the number of the different species that relate to the livestock professionals.

TABLE 17
Ratio of animals to livestock professionals working in DLS

Species	Number	Livestock Professionals	Ratio
Cattle	7 199 708	2156	3339:1
Buffalo	4 832 654	2156	2241:1
Goat	8 762 703	2156	4064:1
Sheep	797 291	2156	369:1
Pigs	1 062 350	2156	492:1
Total animals	22 654 706	2156	10507:1
Fowl	24 280 200	2156	11261:1
Duck	379 753	2156	176:1
Total poultry	24 659 953	2156	11438:1

Source: Department of Livestock Service, Annual report, 2009/10

6.1 Highly Pathogenic Avian Influenza

Highly Pathogenic Avian Influenza H5N1 was first declared in January 2009 in the Jhapa district of eastern Nepal. After one month and one week, another outbreak in the Sharanamati VDC of the same district was reported in village chickens. The H5N1 virus isolated from the Jhapa outbreak was of an identical clade (2.2) to the virus responsible for all HPAI outbreaks which had occurred up to that time in South Asia. However, the epidemics of HPAI occurring between January and March of 2010, which was first detected in the Kaski district in the western parts of the country was shown to be of clade 2.3.2, a clade not previously known in South Asia. Its occurrence in Nepal was thought to be linked to migratory waterfowl as Nepal lies on the flyway between South and Central Asia.

Around 50 317 commercial poultry, 34 014 adult poultry mainly village birds, 6 715 chicks, 1 194 ducks, 902 wild or other birds, 48 219 eggs, 1 485 kilograms of meat and 8 578 kilograms of feed have been destroyed since the first HPAI outbreak in Nepal in 2009 until 2012.

The Department of Livestock Services has developed guidelines for HPAI surveillance. Both passive surveillance, conducted through the follow up to reports of poultry mortality and the analysis of material routinely submitted to the veterinary diagnostic laboratories, and active surveillance targeted on selected sites in districts regarded as being at high risks of HPAI are carried out.

Samples collected from suspicious disease outbreaks are tested by rapid antigen test at the nearest regional veterinary laboratory. All positives and a proportion of negatives are forwarded to the CVL, where real time RT-PCR tests are carried out. When appropriate, material is sent to an FAO/OIE international HPAI reference laboratory for confirmation and further analysis.

Nepal ecological context

There are several factors that make HPAI eradication more difficult in Nepal. Some of them are discussed here under:

i) Incidence of HPAI

The repeated occurrence of HPAI in the bordering Indian state of West Bengal and in the northern part of that country has made Nepal vulnerable to HPAI. In responding to this situation, the Nepal Government has imposed a ban on the import of poultry, and other poultry related items from HPAI affected countries. That prohibition failed to control the informal poultry trade from India resulting in the first ever outbreak in the history of the country in Jhapa followed by other outbreaks in Jhapa, Pokhara, Banke, Chitwan, Rupandehi, Kailali, Dang, Nawalparasi Bhaktapur,

Lalitpur, Kathmandu, Ilam, Sunsari, Dhading and Nuwakot districts. The Tables 18 and 19 show the following HPAI incidences in Nepal during the years 2009-2013 by location and type and numbers of poultry that were stamped out.

TABLE 18
HPAI incidences in Nepal during the years 2009-2013 and losses by district and category of poultry

District	Outbreaks			Poultry stamped out			
	No	Years	BYP	C	CB	CL	All
Banke	1	2010	194				194
Bhaktapur	6	2011,2012,2013	308	1 072 020		780	1 073 108
Chitwan	18	2010, 2013	374	16015	2 360	64 592	83 341
Dang	1	2010		11128			11 128
Dhading	1	2012			150		150
Ilam	1	2012	241				241
Jhapa	21	2009,2012,2013	2 430		696	4 586	7 712
Kailali	2	2010, 2013	4 551		1 241		5 792
Kaski	12	2010, 2013	881		3 373		4 254
Kathmandu	30	2012, 2013	57	216 788	66 354	27 485	310 688
Kavre	2	2013		213 447	35 420		248 867
Lalitpur	8	2012, 2013	21	14 312	24 878	3 164	42 375
Makwanpur	1	2013		10 191			10 191
Nawalparasi	4	2010, 2013	3 616		875	0	4 491
Nuwakot	1	2012	398				398
Rupandehi	6	2010, 2013	0		1 887		1 887
Sindhuli	1	2013				12	12
Sindhupalchowk	1	2013			1 276		1 276
Sunsari	3	2012	44	4 853		3 815	8 712
Taplejung	1	2013	632				632
All	122		13 747	1 558 754	138 510	104 434	1 815 449

BYP Backyard poultry, C Commercial poultry different categories, CB Commercial broiler, CL Commercial layer

Source: www.oie.int

TABLE 19
Poultry numbers stamped out in Nepal during the years 2009-2013

Type of poultry	2009	2010	2011	2012	2013	All
Backyard poultry	83	8 260	308	1 212	3 884	13 747
Commercial poultry different categories		22 565		4 853	1 531 336	1 558 754
Commercial broiler				150	138 360	138 510
Commercial layer				11 895	91 109	103 004
All	83	30 825	308	18 110	1 764 689	1 814 015

Source: www.oie.int

ii) Evidence of illegal imports at different custom points Year 2009/10

The information provided by the Tables 20 and 21 show that illegal imports of poultry and poultry products are occurring in locations near the country borders. Permanent driving forces for cross border trade are economic factors (price difference) and supply of poultry and poultry related products whereas temporary driving forces are socio cultural practices like festivals, fairs, temporary market (Haat Bazaar), market closure, religious practices and consumption habits.

Instances of illegally imported poultry (duck, duck egg and village chickens) have also been recorded entering high consumption centers (Kathmandu valley, Kaski, Chitwan and Rupandehi from Jhapa and Morang) with a potential to speed up the transmission of bird flu from one place and region to another in particular to cities where 30% of total population reside. High population growth and consequent demand in those locations fueled by internal migration have challenged the government authorities to effectively and efficiently control this zoonotic disease

TABLE 20
Nature and amount of illegal imports seized in different places (2008/09)

Animal Quarantine office	Poultry eggs	Duck eggs	Live bird (Poultry)	Ducks	Other birds	DOCs	Poultry meat (Kg)
Kakarvitta	391		160	9	22	210	62
Biratnagar	4 228				4	350	
Birgunj	3 690	30 450		650		5 380	733
Janakpur	5 560					36 380	373
Kathmandu	420			92 kg meat		10 875	780
Bhairahawa	200					45 263	355
Nepalgunj	4 178					4 142	345
Gaddachauki	4 650						

Source: Central Animal Quarantine Office reports, 2008/09,

iii) Evidence of imported poultry and poultry products dumped in different border locations

TABLE 21
Nature and amount of illegal poultry dumped in different locations (2008/09)

Locations	Products	Quantity
Rupaidia-Banke	Eggs	2500-3000 (during 7 months)
	Live birds	300-400
Makwanpur	Local birds	1658
	Pigeons	19
	Ducks	5
	Eggs/duck eggs	1725
Kakarvitta,Jhapa	Poultry	895
	Eggs	30
	Chicks	1168
	Ducks	8
Morang	Broilers	130
	Dressed chickens	71
	Ducks	5
	Eggs	35
	Dressed chickens(Kg)	90
	One day old chicks	7200 (50% from Siraha)
	Layers	20

Source: Central Animal Quarantine Office reports, 2008/09

iv) Presence of wild/migratory birds and its associated habitat

There are many wetlands areas in Nepal that are ideal homes for migratory and wild birds. In addition, Nepal is on two routes for migratory birds, which are known to be potential carriers of the disease.

v) Other socio-cultural factors

People from India (Darjeeling & Sikkim etc) bring significant numbers of village chickens and ducks to offer during the five day long yearly festival of "Mai Mela". Two weekly Haat-bazaars in Nakalbanda (Indian market near Jhapa) also facilitate entry of live and butchered birds and eggs. It is noteworthy that this also triggers the import of other regular commodities like DOCs, village and broiler chickens due to heavy consumption in festive seasons. There was no evidence of importation of duck and duck eggs in Banke. In festival seasons, demand of poultry products is very high and as the supply is not regular, this results in the stimulation of further informal trade.

Concerned ministries with the assistance of donor organizations (WB and FAO) are implementing surveillance activities in different capacities throughout the country. For monitoring purpose, they have defined risk in accordance with the degree of threat that a district possesses. In accordance with defined parameters, 26 districts mostly located in the Terai zone are categorized as high risk districts followed by medium risk districts (18) and low risk districts (31).³⁰

The high risk points are defined by assigning scores regarding access to border, to highways, poultry and duck population, entry of illegal birds/eggs, proximity to wild life and water resources, previous incidence of HPAI, closeness to national parks, high consumption centers and link roads to those centers. However, it is a challenging task if not impossible to enforce the ban on informal

³⁰ FAO/USAID. 2009, Compendium of documents relating to Avian Influenza in Nepal, First Edition.

poultry trade in the light of high price differentials across the porous border with minimal security arrangements and to carry out AI surveillance activities effectively and efficiently.

6.2 Other major poultry diseases

About twenty-five years back there were only a few commercial poultry farms and important poultry diseases and vaccinations were limited to Newcastle disease and Fowl Pox. Now, the rapid expansion of the commercial poultry industry and importation of broiler and layer parent flocks is accompanied by innumerable infectious and non infectious diseases affecting the poultry population. This necessitates the farms to give proper attention to their bio-security and quality control of feed and drugs that are used.

TABLE 22
Important poultry diseases and their epidemiology (2008/09)

Disease	No. of outbreaks		No. of affected		No. dead	
Newcastle disease	128	3.7%	23 968	4.1%	5900	20.6%
Fowl cholera	31	0.9%	4 685	0.8%	201	0.7%
Fowl pox	398	11.5%	14 498	2.5%	193	0.7%
Gumboro	375	10.9%	291 519	50.3%	12 015	42.0%
Mycoplasmosis (<i>M. gallisepticum</i>)	32	0.9%	49 079	8.5%	1 437	5.0%
Pullorum (<i>S. pullorum</i>)	138	4.0%	64 382	11.1%	1 584	5.5%
Coccidiosis	2 330	67.5%	118 806	20.5%	6 401	22.4%
Hydropericardium syndrome	19	0.6%	12 995	2.2%	867	3.0%

Source: Annual epidemiological bulletin 2009, Veterinary Epidemiological Unit

The data presented in the Table 22 was compiled by the veterinary epidemiological units based on the reports collected from District Livestock Services Offices throughout the country including cases of both commercial and backyard poultry. Out of 3 451 disease outbreaks during the fiscal year 2008/09, coccidiosis was the major disease affecting poultry followed by Fowl Pox, Gumboro, Pullorum and Newcastle disease. Other diseases causing outbreaks were negligible. Regarding the number of birds affected Gumboro had the biggest impact followed by coccidiosis, pullorum and mycoplasmosis. Gumboro also caused the large number of deaths.

A study was conducted on the mortality pattern of the village poultry in eastern hills of Nepal. Out of 1 162 chicken necropsied the major causes of death recorded were infectious bursal disease (56.3%), infectious bronchitis (8.6), Coccidiosis (7.8%), Ascariasis (5.8%), Newcastle disease (3.5%) and Fowl Cholera(2.5%)(Jha *et al.* 1996). A study conducted in the Chitwan district of Nepal revealed major outbreaks of infectious bursal disease, Newcastle disease, and Marek's disease apart from coccidiosis and chronic respiratory disease (Dhakal, 2000).

A study found that many diseases cause heavy loss in backyard poultry during the early age of the birds. Maximum mortality occurred before 8 weeks of age (14.5%) followed by 8-20 weeks (10.1%) and lowest mortality (4.6%) occurred in birds older than 20 weeks and in 1998/99 the highest proportion of mortality occurred due to Gumboro disease (35.4%) (Singh and Bhurtel 1998/1999). Collibacillosis was a major disease affecting birds younger than 8 weeks old birds. Reports from 1999/2000 showed the largest number of cases to be collibacillosis (80%) followed by coccidiosis (7.1%) and aspergillosis (2.4%) (AHRD Annual Report, 1999/2000).

6.2.1 Mortality due to predators

No study was conducted so far regarding the loss of poultry due to predators. Anecdotal information indicates that loss due to predators is approximately one third of the poultry raised under backyard and semi-scavenging system.

6.3 Biosecurity measures adopted

A value chain study (Stop AI–DAI/Winrock/IDE, 2008) points out several challenges regarding bio-security related measures that are practiced in Nepalese hatcheries including:

Unsatisfactory disposal of unhatched eggs, dead chicks and chickens in two of the three visited hatcheries. No antibody tests for diseases in all of the hatcheries. Rodent proof construction only in one of the visited hatcheries, but all have a strong fence or wall around their premises to prevent village chickens, ducks, dogs and cats from entering. However, wild birds were found in two of the hatcheries. Overall, the hatcheries had low sanitary and bio-security conditions.

6.4 Biosecurity action plans

The Government of Nepal has prioritized the issue of bio-security and has launched an awareness program for animal health professionals, para-professionals and farmers by organizing separate training programs on bio-security measures to be taken before, after, and during the outbreak of HPAI or by incorporating it in regular training program. Animal Health workers have also been informing farmers, traders, and slaughterers about bio-security and hygiene during active and passive surveillance of Avian Influenza on their premises. The USAID funded Stop AI project published a manual for animal health technicians and farmers for bio-security measures to be adopted for the prevention and control of HPAI. The activities carried out by that project complemented the Government efforts to contain AI and included trainings for animal health technicians and commercial farmers and the distribution of the manual to all the stakeholders. In April, 2011 a workshop was organized with the support of FAO and USAID to draft the bio-security plan for the government. The recommendations were submitted to the Government but the formal bio security plan is yet to be endorsed and announced by the government of Nepal.

Chapter 7

Current policies, legal framework

The Agricultural Perspective Plan (APP), implemented in 1997, contains the Government's long term vision and strategy for the development and growth of Nepal's agricultural sector. The APP emphasizes realigning investment in selected priority inputs and outputs. Such investments are expected not only to increase farm incomes, bringing direct benefits to the farming community, but also generate strong multiplier effects on growth of output and employment in non-farm sectors. In 2004, the government approved the National Agricultural Policy (NAP) of the MoAC (MoAD) with the primary goal of attaining food security and improving livelihoods through the transformation of subsistence-based agriculture into a commercialized and competitive system. The NAP has been the guiding framework of long term development of livestock sector in Nepal. The Department of Livestock Services is the responsible authority to formulate and implement different programs in accordance with that framework.

The objectives of the Department of Livestock Services as outlined in Three Year Livestock Development Plan are as follows:

- Increase in production and productivity through management of natural resources to contribute towards income generation, food security and poverty alleviation.
- Promotion and strengthening of livestock and poultry industries and marketing.
- Prevent and control livestock disease and zoonosis to contribute toward food security and protection of public health.

7.1 Poultry in livestock policy

Contribution of poultry is included in the plans for total meat production, but no specific targets are formulated for poultry. In accordance with the livestock and poultry policy, included in the National Agricultural Policy (NAP), objectives and expected result envisioned by three year livestock development plan that is about to complete in 2011 are as follows;

- 40 000 farming households directly benefitting annually either through groups/committee in poverty alleviation.
- 120 000 farming households directly benefitting through Livestock Service Promotion.
- Accomplishing the target of 9.94 kg meat availability/person from 8.6 kg (base year 2007).
- Increase present milk availability from 51 liters / person to 54 liters.
- Increase egg availability from 24 eggs /person to 25 eggs.

7.2 Legal framework

The available legal framework for both acts and regulations related to livestock policy in Nepal include:

- Acts
 - Animal Health and Livestock Services Act, 2055 B.S. (1998 A.D.)
 - Animal Slaughterhouse and Meat inspection Act 2055 B.S. (1998 A.D.);
 - Nepal Veterinary Council Act 2055 B.S. (1998 A.D.)
 - Consumer Protection Act 2054 B.S. (1998 A.D.)
 - National Cooperative Development Board Act, 2049 B.S. (1992 A.D.)
 - Nepal Agriculture Research Council Act, 2048 B.S. (1991 A.D.)
 - Agricultural Development Bank Act 2024 B.S. (1967 A.D.)
 - Animal Feed Act 2033 B.S. (1976 A.D.)
 - Nepal Food Act 2023 B.S (1966 A.D.)

- Regulations
 - Animal Slaughterhouse and Meat Inspection regulation, 2057 B.S. (2001 A.D.)
 - Nepal Veterinary Council Regulation 2056 B.S. (1999 A.D.)
 - Animal Health and Livestock Service Regulation, 2055 B.S.(1998)
 - Animal Feed Regulation 2041 B.S. (1984 A.D.).

The Animal Health and Livestock Services Act 1998, the Slaughterhouse and Meat Inspection Act 1998 and Nepal Veterinary Council Act 1999 are main legal instruments to restrict the entry of HPAI/H5N1, control and contain it. The pivotal act entitled "Bird Flu Disease Control Order 2064 (2007)" endorsed by Government of Nepal with the legal definitions and right used under Disaster Management Act, 2039 (1982) of Article (4) provides responsibility, accountability and rights of different government and private stakeholders to effectively and efficiently carry out the functions related to control and contain bird flu. It involved Department of Livestock Services as the prime authority in taking decisions in coordination with quarantine, local governance, security personnel, wildlife, custom department, department of revenue, home ministry and administration etc.

The veterinary council act deals mainly with registration of veterinarians and ethical conduct of veterinary practice. The slaughterhouse and meat inspection act regulates the slaughter of animals and sale of meat as well as inspection of animals before and after slaughter. However provisions in this act are seldom enforced. The animal health and livestock services act deals mainly with quarantine of imported animal and animal products. The act lacks adequate provisions for empowering veterinarians for control of contagious and infectious disease. In order to fulfill the requirements of WTO/OIE, immediate action is to be initiated to amend the act, and to establish effective enforcement mechanisms.

Chapter 8

Analysis

8.1 Current strength and weakness of the poultry sector

Strength

The poultry sector contributes with about 3.5 percent to the GDP. With an investment of around NRs 22 billion the poultry industry needs a strong supporting policy. The poultry population is comparatively evenly distributed among households. Both the commercial sector and the backyard production play a positive role in meeting the demands of meat and egg of the country. The commercial sector has contributed in ensuring self reliance and competitiveness by employing large number of youths directly and indirectly. It has also acted as a tool for mitigating poverty and aiding gender equity.

- ▶ Increasing trend in production and productivity heading towards self-sufficiency in the country.
- ▶ increasing tendency of consumer favoring white meat;
- ▶ popularity of poultry meat without regard to caste/creed/age.
- ▶ one of the cheapest source of animal protein but very low consumption compared to buffalo meat;
- ▶ availability of broiler meat and eggs in all urban centers and even in small market areas;
- ▶ quarantine act, meat act for quality control Organized private sector and good coordination between government stakeholders in opening slaughterhouse in near future;
- ▶ rapid financial turnover;
- ▶ increasing inflow of tourists, rapid urbanization, and changing food habits of urban inhabitants; and
- ▶ availability of comparatively cheaper labor.

Weakness

The following points were extracted from different documents and research studies and shed light on the weaknesses prevalent in the Nepalese poultry industry which demand immediate attention from the Government and other concerned poultry stakeholders.

- ▶ Irregular supply of quality chicks at competitive price;
- ▶ lack of updated database regarding demand and supply statistics, manufacturer information, product pricing, feed, medication and veterinarians;
- ▶ weak knowledge of poultry farmers about maintaining bio-security, production and marketing;
- ▶ lack of adequate knowledge about quality standard of feed, medicine, day old chicks and vaccines;
- ▶ improper handling of poultry products, medicines and vaccines;
- ▶ not competitive in terms of pricing and quality standards to control informal imports;
- ▶ several incidence of informal imports with possibility of immediate disease transmission threatening public health;
- ▶ quality standard not fully adopted in all steps of production and distribution;
- ▶ lack of slaughterhouses and processing companies delivering safe and hygienic poultry products;
- ▶ lack of introducing new policies and adapting old through comprehensive guidelines and gap in effective implementation and enforcement;
- ▶ weak enforcement of existing rules, regulation and guidelines ;
- ▶ lack of grandparent stock farm in Nepal limiting the prospects to some degree in decreasing cost of chickens entire the value chain;
- ▶ porous border, inadequate quarantine check post with minimal institutional arrangements to control informal imports;
- ▶ weak association of poultry farmers across the value or supply chain;
- ▶ maintenance of bio-security throughout the supply chain;
- ▶ lack of regular sero-monitoring, disease diagnosis and prevention mechanisms.

8.2 Prospects in the poultry sector

Poultry production is moving towards self sufficiency and the growth rate of Nepal's commercial sector is satisfactory at around 17-18 percent annually. Its contribution to overall GDP is also encouraging and increasing. Poultry meat is gaining popularity among the population without regard of caste/creed/age, being one of the cheapest sources of animal protein. Moreover, consumers are favoring white meat like chicken and fish. Additionally, it is emerging as a strong industry directly employing and engaging 70 000 people. Likewise, it has created multiplier effect to other industries.

Among others factors, producers are still not able to reduce the cost of quality poultry products. It is expected that committed engagement from additional individuals, big houses and existing entrepreneurs to allocate further resources will increase competition and to some extent reduce the cost throughout the supply chain. Likewise, endorsement of rules and regulations and its associated mechanism concerning quality poultry products in farms, markets/LBMs, butcher houses and support to establish standard slaughterhouses will ensure healthy and hygienic products. Attempts from the concerned government department are under way to collect, store, update and disseminate the information related to demand and supply statistics electronically. Those activities will keep consumers free from price discrimination selecting quality products at reasonable price besides helping concerned stakeholders to buy and sell poultry products rationally in accordance with the supply and demand situation.

There is an urgent need to implement and supervise quality checks of feed ingredients, vaccines, day old chicks and other related products. This should benefit farmers to achieve an optimal output through realization of the right overall bird weight. The number of technical trainings given to poultry farmers should be increased to enhance and upgrade their knowledge regarding bio-security. The Nepalese Government has adopted a Public Private Partnership model to conduct relevant trainings and encouraged private institutions to carry out these on contractual basis in addition to those that it organizes itself.

Backyard poultry comprises 46 percent of the total population of the poultry. It is the major means of cash income among the resource poor rural population. Besides that, people from certain

section of society prefer eating meat of village poultry along with its importance during festive seasons. Meat and eggs from village poultry fetches two and half times higher prices than commercial poultry products. In realizing its importance and potentiality, proper strategies and policies should be developed to promote this sector.

The informal entry of poultry and poultry products into the country is still ongoing and will continue in the future. To cope with this situation and replace informal imports necessitates restructuring the cost throughout the supply chain. Until this can be achieved, the threat of bird flu and possible outbreaks of other diseases will continue to challenge the industry. There have been substantial efforts from the Government and concerned stakeholders to control and contain the entry to reduce the risk of future outbreaks.

There are some unverified news of feed exports to India and eggs and chickens to Bhutan. If true, this represents a milestone achieved with a lot of prospects for the Nepalese poultry industry in days to come.

One can conclude that if stakeholders in the value chains succeed to reduce the effects of disease and ensure the supply of quality poultry and poultry products at reasonable price, the demand will significantly increase in the days to come. Economic growth and rapid urbanization will also fuel the increase in the demand

Annex I

Who is who (contact list)

Among the many institutions and organizations related to poultry sector those mentioned can either provide useful information themselves or can provide advice how to identify other specific organizations.

Government

Category	Ministry
Name	Ministry of Agricultural Development.
Address	Singh Durbar, Kathmandu, Nepal
Telephone	+977-1-4211808
Fax	+977-1-4211935
Email	memoad@moad.gov.np
Website	www.moad.gov.np www.aicc.gov.np

Category	Department
Name	Department of Livestock Services
Address	Hariharbhavan, Lalitpur
Telephone	+977-1-5522056/5521610
Fax	+977-1-5542915
Email	dls@ntc.net.np
Website	www.dls.gov.np

Category	Research council
Name	Nepal Agricultural Research Council
Address	Singh Durbar Plaza, Kathmandu, Nepal
Telephone	+977-1-4262650/4262663
Fax	+977-1-4262500
Email	N/A
Website	www.narc.org.np

Category	Financial institution
Name	Agricultural Development Bank Ltd.
Address	Ramshah Path, Kathmandu, Nepal
Telephone	+977-1-4263387
Fax	+977-1-4262929
Email	agrbnk@infoclub.com.np
Website	www.adbl.gov.np

Producers' organization

Category	Association
Name	Nepal Hatchery Industries Association
Address	Chabahil, Kathmandu, Nepal
Telephone	+977-1-6204301
Fax	+977-1-4495080
Email	nhiaktm@hotmail.com
Website	NA

Category	Association
Name	Nepal Feed Industries Association
Address	Chabahil, Kathmandu, Nepal
Telephone	+977-1-6204301
Fax	+977-1-4495080
Email	nfiaktm@hotmail.com
Website	NA

Category	Association
Name	Nepal Egg Producers Association
Address	New-road, Narayangadh, Chitwan, Nepal
Telephone	+977-56-571649
Fax	NA
Email	nepalpf@wlink.com.np
Website	NA

Category	Association
Name	Nepal Poultry entrepreneur Association forum
Address	New-road, Narayangadh, Chitwan, Nepal
Telephone	+977-56-571649
Fax	NA
Email	nepalpf@wlink.com.np
Website	NA

Category Association
Name Poultry Federation of Nepal
Address Chhabahil, Kathmandu, Nepal
Telephone +977-1-6204301
Fax NA
Email NA
Website NA

Category Association
Name World Poultry Science Association/Nepal branch
Address New-road, Narayangadh, Chitwan, Nepal
Telephone +977-56-571649
Fax NA
Email nepalpf@wlink.com.np

Annex II

Lists of major projects- poultry sector

Project: Avian Influenza Control Project
 Agency: World Bank
 Duration: 2006/07 – 2010/11
 Geographic area: National
 Directly benefiting: Department of Livestock Services
 Status: Ongoing

Overall objectives of the project were to minimize threat of Highly Pathogenic Avian Influenza (HPAI) infection in domestic poultry and human being. Objectives of animal health component were to enhance avian influenza prevention and preparedness capability, to strengthen veterinary services – disease surveillance and diagnostic capacity. It has three components (I) animal health (II) Public awareness, information and communication and (III) Project management unit – CCT. The project will have technical assistance team consisting of international and national experts hired through FAO.

Project: Community Livestock Development Project
 Agency: ADB
 Duration: December 2005 – December 2010
 Geographic area: National
 Directly benefiting: 391 820 poor households (195 910 household (HH) from increased production, 11,230 HH from livestock processing and marketing, 1 739 HH from higher altitude program and 64 152 HH through microfinance.
 Status: Completed

The project was conducted in 3 modules (I) Intensive Livestock Production in 22 districts (II) Processing, Marketing and Commercialization in 21 districts and (III) Multi-sectoral Higher Altitude Pilot Project in 5 districts. Investment in poultry sector was mainly on processing, marketing and commercialization and also in poverty reduction program for poor farmers of remote areas.

Project: Immediate Technical Assistance to Strengthen Emergency Preparedness for Highly Pathogenic Avian Influenza (OSRO/RAS/605/USA)
 Agency: FAO
 Duration: 2006 – 2011
 1st phase: August 2006 – September 2007
 2nd phase: August 2007 – September 2008
 3rd phase: August 2008 – September 2009
 4th phase: August 2009 – September 2010
 5th phase: August 2010 – September 2011
 Geographic area: National
 Directly benefiting: Department of Livestock Services
 Status: Ongoing

The main aim is to strengthen surveillance capacity of the Department of Livestock Services to fight HPAI.

Project: STOP AI
Agency: Winrock International Nepal
Duration: 24 months in three phases
Geographic area: Eastern Nepal (Siraha, Saptari, Sunsari, Morang, Jhapa, Ilam)
Directly benefiting: Department of Livestock Services
Status: Completed

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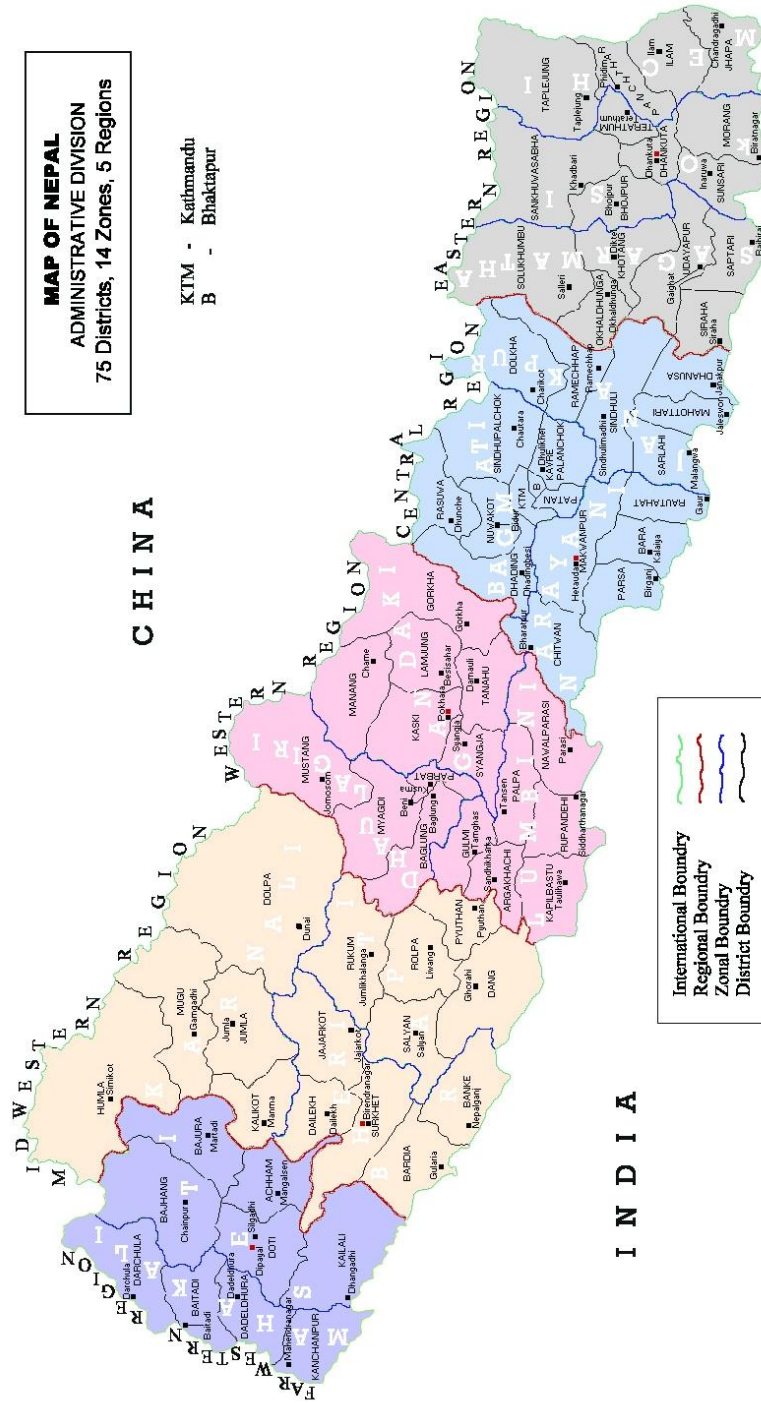
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- <http://esa.un.org/unup/p2k0data.asp>
- <http://www.ngofederation.org/>
- <http://www.unohrls.org/en/ldc/related/62/>
- <http://data.worldbank.org/indicator/SP.RUR.TOTL.ZS>

Annex IV

Country map



Source: Vidiani.com

