

VALUE CHAIN ANALYSIS OF POULTRY PRODUCTS IN PATHEIN AND MYAUNG MYA TOWNSHIPS

Prepared by

Thi Mar Win and Consultancy Team

July 2012



Executive Summary

The study, *Value Chain Analysis of Poultry Products in Patheingyi and Myaung Mya Townships*, is one activity of two LIFT-funded projects in Patheingyi and Myaung Mya implemented by World Vision Myanmar. The overall goal of the LIFT project is, ***“to increase income with improved market access for poorest households and communities within selected ADPs toward improved child well-being”***.

This value chain analysis gives an overview of the entire value chain, from producer to consumer, and the potential for the chosen product in terms of both value and market terms. The objective of this study is to gain a better understanding of the complete value chain study for poultry (chicken and duck) products.

The specific objectives are to:

- 1) Identify all actors and stakeholders of duck value chain at the local level (Patheingyi and Myaung Mya Townships), and its linkages with regional levels (Ayeyarwaddy and Yangon Division);
- 2) Draw a value chain map to identify the current value chains of chicken and duck products in the project areas at the local level;
- 3) Discover bottlenecks and impediments to progress of the current commodity chain;
- 4) Analyze value and share of added value between different actors all along the chains in order to understand whether there is potential for increased benefits to farmers; and
- 5) Provide recommendations on ways for farmers and farm groups to increase profit margins.

The research methodology involved:

- A literature review
- Personal discussions
- Focus Group Discussion (FGD)
- Primary Survey/ Interviews

Three sample villages in Patheingyi Township were selected, and seven villages in Myaung Mya Township. A total of 147 sample interviewees and 10 FGDs were made during the survey. Market value chain framework was used as the principal analytical framework, with a focus on the target livestock producers' assets, practices, profit margin, opportunities and challenges in relation to the enabling environment.

The total poultry population of Myanmar was 168.9 million birds in 2011, comprised mainly composed of chickens (153.2 million birds; 91%), followed by ducks (15.3 million birds; 8%) and other avian species (1.45million birds; 1%). Nearly half of Myanmar's poultry are raised in these five divisions: Mandalay, Sagaing, Yangon, Bago and Shan. Yangon Division has the largest poultry inventory with 15 million birds, followed by the Bago Division with 12 million birds. Combined, Yangon and Bago account for 42% of the national duck population, and for 25% of the national chicken flock. Chicken meat and egg production predominates over duck meat and eggs.

The study focused on duck egg production and local chicken raising in the project implementation areas. The segmentation of the market was done on following demographic variables: local markets at the village level, the township market level, and the Yangon wholesale market level. The main actors in the duck value chain are input suppliers, farmers (producer), collectors, traders (wholesale/ retail) and the consumers. This is similar to the local chicken value chain, but in the chicken value chain there is the additional function of processing not found in the duck value chain.

In both townships the average herd size for duck farming is 80 heads/household, while that of native chicken farming is 33 heads/household. The laying rate of duck eggs ranges from 50% to 90%, with an average laying rate of 81% among sample farmers. The average selling price for farmers of duck eggs was 68 kyat/egg, with a break-even price of 40.36 kyat/egg assuming a 70% laying rate. The selling price for collectors is 3 kyat higher than for farmers. Marketing cost for collectors ranges from 0 to 1.5 kyat/egg, and their profit margin is approximately 9 kyat/egg.

Average costs for keeping a herd of local chickens was about 151,335 kyat for an average of 33 heads, which comes to 4,586 kyat/head. If these costs are calculated without considering the cost of breeds with natural brooding, the average cost would be 3,790 kyat/head. If we assumed a hen can reproduce at least 10 offspring during its life span, and the average weight of a bird is 0.65 viss, then a total of 6.5 viss can be obtained. At a farm gate price of 3,800 kyat/viss the farmer will gain 24,700 kyat as total revenue. Therefore, average gross benefit of a hen would be 19,955 kyat over six months, indicating that the rate of return from native chickens is very high.

Common challenges and limitations in the study areas are bio-security, the quality of breeds available, and price risks. General recommendations for the development of value chain of local chicken and duck production were generated.

Conversion Table for Local Measuring Unit

| Conversion Table for Local Marketing Unit | | | |
|---|---|--------|------------|
| 1 Viss | = | 3.6 | Pound (lb) |
| 1 Kilogram | = | 2.205 | Pound (lb) |
| 1 Viss | = | 1.6325 | Kilogram |
| 1 Tonne (MT) | = | 612.5 | Viss |
| 1 Tonne (MT) | = | 1000 | Kilogram |

Value Chain Analysis of Poultry Products in Patheingyi and Mawlaikya Townships

*This report has been produced with financial assistance from the LIFT for World Vision Myanmar.
The contents of this publication are the sole responsibility of the author.*

Table of Contents

| | |
|--|-----------|
| Abbreviation | iii |
| I. INTRODUCTION | 1 |
| 1.1 Objectives | 1 |
| 1.2 Scope of Work and Methodology..... | 2 |
| 1.3 Outline of the Survey Areas | 2 |
| II. NATIONAL CONTEXT OF THE LIVESTOCK SUBSECTOR | 7 |
| 2.1. Livestock Production and Livelihoods in Myanmar | 7 |
| 2.2 Poultry Production and Marketing in Myanmar | 9 |
| 2.2.1 Duck Production | 10 |
| 2.2.2 Chicken Rearing..... | 13 |
| 2.2.3 Political Environments for Poultry Production and Livestock sub-sector | 16 |
| III. VALUE CHAIN ANALYSIS OF DUCK IN THE STUDY AREAS | 18 |
| 3.1 Market Segmentations | 18 |
| 3.2 Actors along the Value Chain | 21 |
| 1) Input Suppliers | 23 |
| 2) Farmers..... | 22 |
| 3) Duck Eggs Collectors..... | 28 |
| 4) Yangon Eggs Collectors and Distributors..... | 30 |
| 5) Wholesalers in Yangon Market | 30 |
| 6) Retailer | 30 |
| 3.3 Price Difference along the Value Chain | 31 |
| 3.4 Linkages along the Chain | 31 |
| 3.5 Opportunities and Challenges..... | 32 |

| | |
|--|-----------|
| 3.6 Recommendation | 32 |
| IV. VALUE CHAIN ANALYSIS OF NATIVE CHICKEN | 34 |
| 4.1 Value Chain Map | 34 |
| 1) Farmers/ Producers | 34 |
| 2) Assembler/Broker/ Primary Collectors | 38 |
| 3) Wholesale and Retail Traders in Township Market | 38 |
| 4) Processors | 40 |
| 5) Wholesaler/ distributors in Yangon Market | 42 |
| 4.2 Strengths | 42 |
| 4.3 Challenges | 42 |
| 4.4 Other Key Findings | 43 |
| 4.5 Recommendations | 43 |
| V REFERENCE | 45 |

Annexes

Annex 1: TERM AND CONDITIONS

Abbreviations

| | |
|-------|---|
| ADP | Arial Development Programme |
| CAHW | Community Animal Health Extension Workers |
| CSO | Central Statistical Organization |
| DoC | Day old Chicken |
| FCR | Food Conversion Ratio |
| FGD | Focus Group Discussion |
| LBVD | Livestock Breeding and Veterinary Department |
| LFMPE | Livestock, Feedstuff and Milk Products Enterprise |
| LIFT | Livestock Initiative For Transformation |

I. INTRODUCTION

World Vision Myanmar has conducted a study of “Value Chain Analysis of Poultry Products in Patheingyi and Myingyi Townships.” This study is one activity from two LIFT-funded projects in Patheingyi (Ref: M 177554/ PAT/ USAO0125/ 05.03.01/ P09/ DPC/ 802), and in Myingyi (Ref: M 184011/ MMY/USAO0126/01.03.01/P09/DPC/802). The LIFT project was introduced in Patheingyi and Myingyi Area Development Programmes on July 1, 2010, and will finish by the end of September, 2012. The project’s goal is to enable households to utilize increased income to contribute to the wellbeing of children in their community through improved food security and increased capacity to meet the needs for education, health, and good nutrition.

The project seeks to increase income and upgrade the standard of living by increasing market access for families in the targeted areas, thereby contributing to children’s full development. The overall goal of the LIFT project is, **“to increase income with improved market access for poorest households and communities within selected ADPs toward improved child well-being.”** There are three main purposes of the project:

- 1) Improved production of livestock species and access to markets;
- 2) Improved health, nutrition, and education for children through increased household incomes; and
- 3) Provide clear, documented evidence-based programming for livestock asset-based sustainable livelihood programs.

Patheingyi and Myingyi Townships in the Ayeyarwaddy Delta areas are characterized by areas that produce a surplus of rice, abundant fishery products and very favourable livestock production. One of the main livelihood sources in this area is moving livestock from small backyard farms to commercial farms, specifically poultry. The study of this value chain analysis will be to give an overview of the entire value chain from producer to consumer, and the potential of the chosen product in both value and market terms.

1.1 Objectives

The objective of this study is to gain a better understanding of a complete value chain study for poultry (chicken and duck) products. The specific objectives are to:

- 1) Identify all actors/ stakeholders of duck value chain at local levels (Patheingyi and Myingyi Townships) as well as linkages to the regional level (Ayeyarwaddy and Yangon Division);
- 2) Draw a value chain map to identify current value chains of poultry products at the local level in the project areas;
- 3) Discover bottlenecks and issues that threaten the progress of the current commodity chain;
- 4) Analyze the value, and share of added value, between different actors along the chains to learn whether there is a possibility of increased benefits to farmers; and
- 5) Provide recommendations to increase profit margins for farmers and farmer groups.

1.2 Scope of Work and Methodology

This study was conducted by a national market research consultancy team from May 30 to July 8, 2012, by a national market research consultancy team. The field survey was conducted from June 1 to 19, 2012 with support from the LIFT Project Coordinator and local LIFT Community Development Facilitators (CDF) from Patheingyi and Myaung Mya.

The research methodology includes:

- **Literature Review:** Secondary research was carried out during the preparatory stage of the study to understand the overall value chain. From the literature review, insights were developed into key areas to focus on during primary research and discussions. Findings would then be analyzed to establish the framework and necessary recommendations.
- **Personal Interviews:** Personal interviews were made during the study with key stakeholders such as the Chicken and Duck Eggs Association, Broiler Association, Myanmar Livestock and Fishery Federation and a senior executive member of Myanmar Academy of Agriculture, Forestry, Livestock and Fishery Science. Updated information regarding the political background and business environments of the poultry chain was collected.
- **Focus Group Discussion (FGD):** Discussions in each selected sample village were conducted using a participatory approach using semi-structured questionnaires (templates) with key informants and poultry producers. Key informants included village-authorized people, Community Animal Health Extension Workers (CAHW) and representatives of poultry farmers. The main objective of FGD was to gain an understanding of the current situation and to verify specific answers from the individual questionnaires.
- **Primary Survey/Interviews:** Face-to-face interviews were conducted in the project implementation areas including 100 poultry farmers in 10 selected sample villages, as well as traders, input suppliers (breeds, feeds and vaccine) and food processors in the major markets of Patheingyi, Myaung Mya and Yangon.
- **Sampling and Sample Size:** Data collection was conducted with sample villages representing different geographic and livelihood zones, as well as proximity to market access. Instead of simple random sampling, purposive sampling (one of non-probability sampling methods) was used in order to get various strata for various actors and markets. A list of the sample interviewees is described in Table 1.

Table (1) List of the sample interviewees

| Actors | Anticipated number of interviewees at various market levels | | | |
|----------------------------------|---|-----------|-----------|------------|
| | Village | Township | Yangon | TOTAL |
| Duck Farmers | 46 | - | 1 | 47 |
| Chicken Farmers | 57 | - | 2 | 59 |
| Input Suppliers | 1 | 5 | - | 6 |
| Primary Collectors/ Brokers | 11 | 4 | - | 15 |
| Wholesalers, Retailers | - | 5 | 5 | 10 |
| Processors | 1 | 2 | - | 3 |
| Duck and Chicken Egg Association | - | - | 3 | 3 |
| Broiler Association | - | - | 1 | 1 |
| LBVD | - | 2 | 1 | 3 |
| TOTAL | 116 | 18 | 13 | 147 |

- **Analysis Framework:** Market value chain framework is used as the main analytical framework with a focus on the target livestock producer's assets, practices, profit margin, opportunities and challenges in relationship to the enabling environment.

1.3 Outline of the Survey Areas

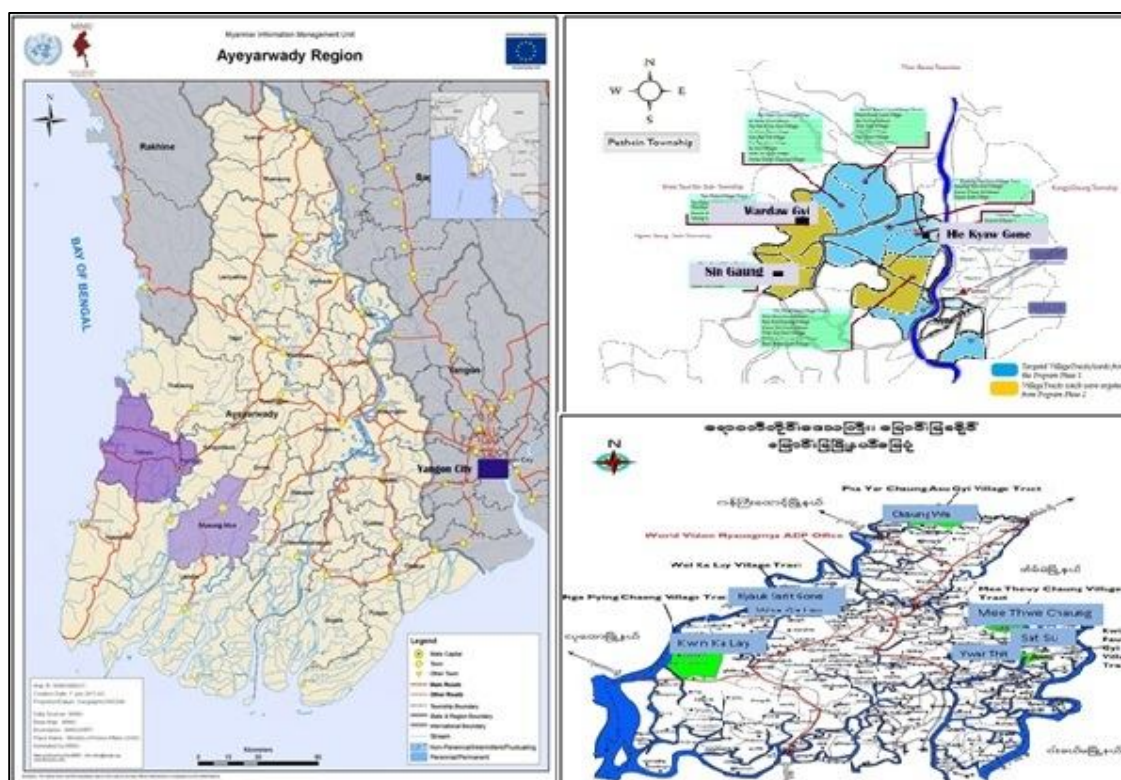


Figure 1- Map of the studied areas (Sources: MIMU and Project documents)

The field survey included the following villages. Three sample villages in Patheingyi Township:

- Hlekyawgone
- Sin Gaung
- Wa Daw Gyi

Seven sample villages in Myingyi Township:

- Kyauk Sarit Gone
- Wel Ka Lay
- Kwin Ka Lay
- Ywar Thit
- Mee Thway Chaung
- Sat Su and Chaung Wa

A map of sample villages surveyed can be found in Figure 1.

Agriculture is the main livelihood in these areas, and most landless households are employed in casual labor, livestock and fishery products. Poultry production is considered one of the most important livestock livelihoods for small farmers and landless households as a source of animal protein and cash income. It is a preferable livelihood due to the abundance of chicken and ducks available in these areas, with favourable geographic conditions.

1) Hlekyawgone Village

Agriculture is the main livelihood in this village and farmers breed ducks and chickens as an alternative income generation. There are two village-level associations—the Livestock Breeders Association, initiated by Livestock and Fisheries Ministry, and the Breeders Committee, initiated by World Vision. There is some overlap of members between the two associations. There are a total of 112 households in the village, 96 of which raise ducks both on a small-scale and commercially. Native chickens are kept for household consumption. There are four fresh water streams nearby and conditions are very favorable for extensive farming of duck on a commercial scale.

2) Sin Gaung Village

Out of 99 households in this village, 30 are farmers and the remainder are landless. Every household keeps chickens, and four or five families raise ducks. A particularly difficult time occurs at the end of the dry season, right before the heavy rains, when farmers lose native chickens due to illness. The village market is big enough to sell all chicken and duck eggs produced.

3) War Daw Gyi Village

Among the 150 households in this village 60 are raising chicken. In addition to that many farmers are also growing vegetables. Landless people work as farm labourers during land preparation, cultivation, harvesting and post-harvesting. Some of them work on rubber nursery plantations and in road construction. Every household raises chickens, and only a few raise ducks. Young chickens are supplied by breeders in the village.

4) Chaung Wa Village

The major livelihood in this village is agriculture. Out of 36 households, 14 are farm households. Both monsoon and summer paddy can be cultivated in Chaung Wa Village. Post monsoon paddy, green gram and black gram can also be grown. Every household raises local chickens, averaging approximately four hens and 10 chickens. Approximately 10 households raise ducks on a small scale. There is high mortality of chickens due to communicable diseases.

5) Kwin Ka Lay Village

The major livelihoods in this village are farming and fishing. Fishermen work the entire year catching prawn and various fish in the creeks and rivers. Farmers cultivate betel nut, cassava and both monsoon and summer paddy. Out of 180 households, 100 farm, approximately 150 households raise an average of three to five hens, and 10 households raise ducks. The principal livestock of the village includes chickens, pig, ducks and goats. Seasonal floods in June and July pose difficulties for farmers.

6) Kyauk Sarit Gone

There are 30 farming households in this village, and they grow paddy in the rainy and the summer seasons. Some grow chili and vegetables. The casual labour force in the village is not enough to support paddy production. For the landless, they fish and make Napa thatch. Every household raises ducks and chicken on a small scale. Villagers can get to Myaung Mya village by either by water or land, and they use bicycles, motorcycle or boat for transportation. Chickens are collected by a village broker in nearby Htan Pin Gone village, and ducklings and young chicken can be purchased in the village.

7) Mee Thway Chaung Village

The major livelihood in this village is agriculture. Out of 106 total households, 20 are farm households. The principal crop is paddy, and it's grown in rainy and summer seasons. Beans such as black gram and green gram are also grown in the summer season.

Approximately 40 households raise chicken, and 10 breed ducks. Households average two to three chickens, and two female ducks. The typical way of raising chickens and ducks is free grazing, and one family member is responsible for looking after the animals. There is a danger of disease with the chickens in the early part of the rainy season, and early on in the cold season in March and April.

8) Sat Su

The major livelihood in this village is agriculture. There are 46 households, and six own land to cultivate. The total paddy cultivation area is 62 acres, and the rain paddy is sown in July. It's harvested in November and December when the summer paddy is cultivated, and then harvested again four months later. The average rain paddy yield is 55 baskets, going up to 80 to 100 baskets in the summer. They also grow green gram and Mat Pal. Paddy cultivation in Sat Su Village is affected by a serious pest infestation.

Every household raises an average of one to two hens and 10 chickens. For 11 households they average 10 to 55 ducks. Every pullet is born from every egg and 50 percent lost their lives during the first two months. There is a high mortality rate of chickens due to their vulnerability to contract communicable diseases.

9) Wel Ka Lay Village

The major livelihood of this village is agriculture. The major cultivated crop is both monsoon and summer paddy. Paddy cultivation is well developed here and the average yield is relatively high. The principal livestock are chickens, ducks, pigs and goats. Approximately 150 households raise an average of five to 10 chickens, and 30 households raise ducks on a small scale. Raising chickens decreased due to the widespread diseases of Le Lain and Kyat Win Kya diseases.

10) Ywar Thit Village

There are 12 farming households in this village, and half of the total households are landless. Some households fish all year, and both monsoon and summer paddy can be grown. The products of the village provide self-sufficiency.

This village is characterized by small scale/ backyard farming of ducks and chickens. The main feed source for ducks and chickens, rice and rice-related byproducts are abundant here. There is also high demand from this village and surrounding villages because they are Karen homes and chickens are used as offerings to the Nat (Spirits). The houses are in close proximity and there are no fences around their compounds. This can lead to the easy spread of communicable diseases for ducks and chickens, and the loss of poultry (approximately 50%) is quite high.

II. NATIONAL CONTEXT OF THE LIVESTOCK SECTOR

2.1. Livestock Production and Livelihoods in Myanmar

In 2010-2011, agriculture accounted for approximately 37.8% of GDP of the Myanmar economy, with the livestock sector contributing 7.8%. (Source: *Agriculture at a glance 2011*, Ministry of National Planning and Economic Development, Planning Department). With a total population of nearly 59.78 million people (as of 2010), about 70% are rural people and engaged in agriculture as the major livelihood. Crop production is the main livelihood in the agriculture sector and the role of livestock production for rural people is regarded as: 1) a source of cash income, 2) helps accumulate property assets, 3) provides food, 4) beneficial due to the draught power of animals, etc. Cattle, buffaloes, pigs, sheep, goats, chickens and ducks are the most important livestock species in Myanmar.

Livestock production in Myanmar is based on the household rearing system. Since modern livestock breeding is capital-intensive and technology-specific in nature, and because both are limited in Myanmar, small scale livestock breeding and production with traditional technology and practice is more common. More than 98% of the total livestock population comes from backyard farming. Farmers keep a few numbers of draught cattle mainly for land preparation and raise pigs, chickens and ducks to supplement their regular income. The major earnings of farmers' income comes from their agricultural produce, while livestock farming for most of them only amounts to a small income.

The indigenous breed of stock, known for being hearty and disease-resistant, is selected in rural areas. Livestock Breeding and Veterinary Department (LBVD), a government institution responsible for animal health and disease control, provides veterinary services to the livestock farmers. The Livestock, Feedstuff and Milk Products Enterprise (LFME), responsible for livestock development, provides livestock farmers with good breeds of livestock and good quality animal feed at market price. Table 2 describes livestock population in Myanmar over the years.

Table-2 Livestock population in Myanmar (Source: CSO 2008, LBVD)

| Sr. | Year | Type of livestock (in thousands: x 1,000) | | | | | | |
|-----|---------|---|---------|----------------|-------|---------|--------|------------------|
| | | Cattle | Buffalo | Sheep/ goat | Pig | Chicken | Duck | Turkey, Geese |
| 1 | 2000-01 | 109.8 | 2,441 | 1,807 | 3,974 | 47,755 | 6,556 | 902 |
| 2 | 2001-02 | 112.4 | 2,502 | 1,882 | 4,261 | 55,080 | 7,026 | 928 |
| 3 | 2002-03 | 115.7 | 2,555 | 2,023 | 4,626 | 62,143 | 7,483 | 944 |
| 4 | 2003-04 | 117.5 | 2,603 | 2,129 | 4,986 | 72,759 | 7,874 | 963 |
| 5 | 2004-05 | 119.4 | 2,651 | 2,250 | 5,336 | 77,116 | 8,591 | 1,261 |
| 6 | 2005-06 | 121.5 | 2,710 | 2,437 | 5,786 | 84,829 | 9,271 | 1,439 |
| 7 | 2006-07 | 123.9 | 2,773 | 2,661 | 6,432 | 98,647 | 10,239 | 1,470 |
| 8 | 2007-08 | 126.6 | 2,845 | 2,922 | 7,092 | 110,614 | 11,234 | 1,405 |
| 9 | 2008-09 | 129.0 | 2,900 | 3,200 | 7,700 | 122,300 | 12,300 | 1,500 |
| 10 | 2009-10 | 132.0 | 2,900 | 3,500 | 8,300 | 135,400 | 12,700 | 1,600 |
| 11 | 2010-11 | 136.0 | 3,000 | 4,000 | 9,300 | 153,200 | 14,000 | 1,700 |

Over the past decade, the production of chicken, duck and pig meats also showed an upward trend, with the population of registered fowl (chickens) showing the fastest growth rate of all livestock. Beef and mutton production doubled during the same period to meet the rapidly increasing demand for chicken meat and eggs as shown in Table 3.

Table- 3 Production of Meat (Source: CSO 2008, Livestock and Fisheries Statistics 2008-2009. Unit volume in terms of thousand viss is converted into metric ton)

| Sr. | Year | Beef (MT) | Mutton (MT) | Pork (MT) | Fowl (MT) | Duck (MT) | Turkey, Geese, Muscovy Duck (MT) | Total (MT) |
|-----|------|--------------|----------------|--------------|--------------|--------------|--|---------------|
| 1. | 1998 | 54 | 9 | 83 | 147 | 20 | 2 | 315 |
| 2. | 1999 | 61 | 10 | 102 | 181 | 24 | 2 | 380 |
| 3. | 2000 | 72 | 12 | 120 | 217 | 29 | 2 | 452 |
| 4. | 2001 | 76 | 12 | 138 | 259 | 31 | 3 | 517 |
| 5. | 2002 | 81 | 13 | 167 | 301 | 35 | 3 | 600 |
| 6. | 2003 | 98 | 15 | 224 | 390 | 43 | 3 | 773 |
| 7. | 2004 | 116 | 19 | 265 | 460 | 53 | 4 | 917 |
| 8. | 2005 | 130 | 22 | 332 | 566 | 62 | 5 | 1,117 |
| 9. | 2006 | 148 | 25 | 375 | 654 | 69 | 5 | 1,276 |
| 10. | 2007 | 161 | 27 | 416 | 732 | 75 | 5 | 1,416 |
| 11. | 2008 | 178 | 30 | 472 | 800 | 76 | 5 | 1,561 |

Consumption habits in Myanmar shows a preference for chicken over other kinds of meat, reflected in the fact that more chicken is consumed than other kinds of meat. In Myanmar, per capita consumption of chicken was 9.7 kg in 2006¹. Success in the livestock industry was partially attributed to the improvement of animal health services provided by the LBVD. Also, in line with increases in breeding populations of chickens, total egg production has steadily increased over the years.

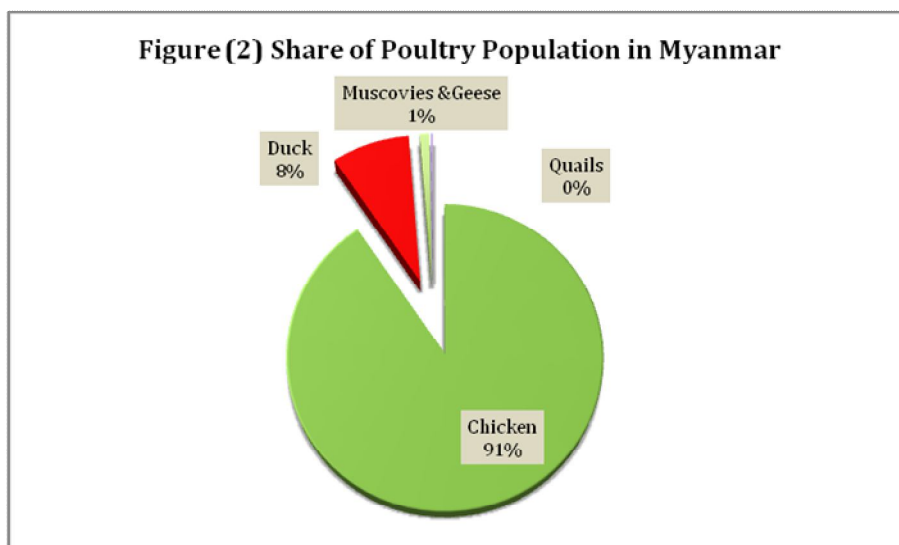
Poultry is of considerable importance to the livelihoods of farmers and landless households, particularly in rural areas where it represents the main source of animal protein and provides cash income in times of need. Poultry production has been shown to be a tool for poverty alleviation, with the potential to promote rural economic growth and contribute to gender equity in communities where men and women manage the farm side-by-side for extra income. Although Myanmar is considered a food surplus country nationally, there are some remote areas which suffer from food insecurity. Small backyard and commercial farming of livestock and poultry address this issue in many ways.

2.2 Poultry Production and Marketing in Myanmar

According to the 2011 animal population, the total poultry population in Myanmar was 168.9 million birds. This population was comprised of chickens mainly (153.2 million birds; 91%), followed by ducks (15.3 million birds; 8%) and other avian species (1.45million birds; 1%). Geese, turkeys, pigeons and quails are also raised as alternative sources of food and income, but in negligible quantities with chicken and duck account for the majority of poultry production. The share of poultry population is illustrated in Figure 2.

Although poultry production occurs in both rural and urban areas, it is concentrated mostly in rice producing areas which provide abundant and inexpensive feed resources. Poultry production in Myanmar is normally combined with other livestock (small and large) keeping, but the degree to which this occurs depends on wealth status, market access, and land availability. Ducks are adaptable in these regions, especially where streams and rivers exist. Fresh and brackish water sources that are available to villages allow for a high population of ducks, whereas areas near salt water are unfavourable for duck raising.

¹ Estimation based on weighted average of monthly per capital consumption of meat of urban and rural household (2006), Livestock and Fisheries Statistics, 2008-09, CSO.



Nearly half (approximately 45%) of Myanmar's poultry are being raised in five divisions, namely: Mandalay, Sagaing, Yangon, Bago and Shan. With 15 million birds, Yangon Division has the largest poultry inventory, followed by Bago Division with 12 million birds. Combined, Yangon and Bago account for 42% of the national duck population, and for a quarter of the national chicken flock. Chicken meat and egg production predominates over duck meat and eggs.

Poultry production systems can be classified into three types: backyard small raising, or less than 50 chicken; semi-intensive, market-oriented, or small- to medium-scale, with a flock size ranging from 50 to 1,000 chicken; commercial poultry production, or having more than 1,000 chickens. Depending on location, infrastructure and stock-carrying capacities, birds can either be kept as free-grazers or in confinement.

According to the data of LBVD, there are approximately 3,000 commercial farms with 4.9 million broiler chickens, over 2,000 of which have 2.6 million layer chicken, 3 quail breeding farms and hatcheries, and 3 meat duck breeder farms. There are approximately 276,449 backyard farms with 15.6 million native chickens, ducks, muscovy and geese.

2.2.1 Duck Production

Duck, although of lesser importance than chickens, it is one of the major livelihoods in the Ayeyarwaddy, Bago and Yangon Divisions. Common ducks are those most often found. Muscovies predominate because they are less water-dependent than common ducks. Much of the land in Myanmar is devoted to rice production, and mixed-farming systems therefore include duck keeping that takes advantage of available resources. Duck raising is dependent on rice supply periods, but supplementary feeds are offered according to the availability of natural feeds.

Ducks are raised outdoors near paddy fields, lakes, swamps and ponds. Backyard farming typically consists of between 10 to 50 flocks, with 50 to 500 ducks kept openly or in semi-roofed areas as market-oriented farming, and netted lots nearby ponds and lakes with seasonal medical treatments

applied according to prevailing diseases. There is an intensive, large scale, industrially-integrated poultry production system used to handle flock sizes of more than 500 birds, handling sometimes up to 20,000 birds. As it is exclusively market-oriented, commercialized farming typically has specific market outlets, but sometimes the Yangon wholesale market is supplied on a daily basis.

The main health issues duck farmers face are respiratory and nervous problems, and viral gastroenteritis. The initial investments required for both species are higher in village backyard systems but lower than intensive commercial systems.

Most duck farms in Myanmar are raising ducks for egg production, with only a few duck farms in the Yangon areas raising ducks for meat. In Ywathar Gyi Village near Yangon there is a government-run duck farm producing meat-type ducks. *Legard* Duck, the species having high Feed Conversion Ratio (FCR) of approximately 2.3-2.5, has been produced intensively at that farm.

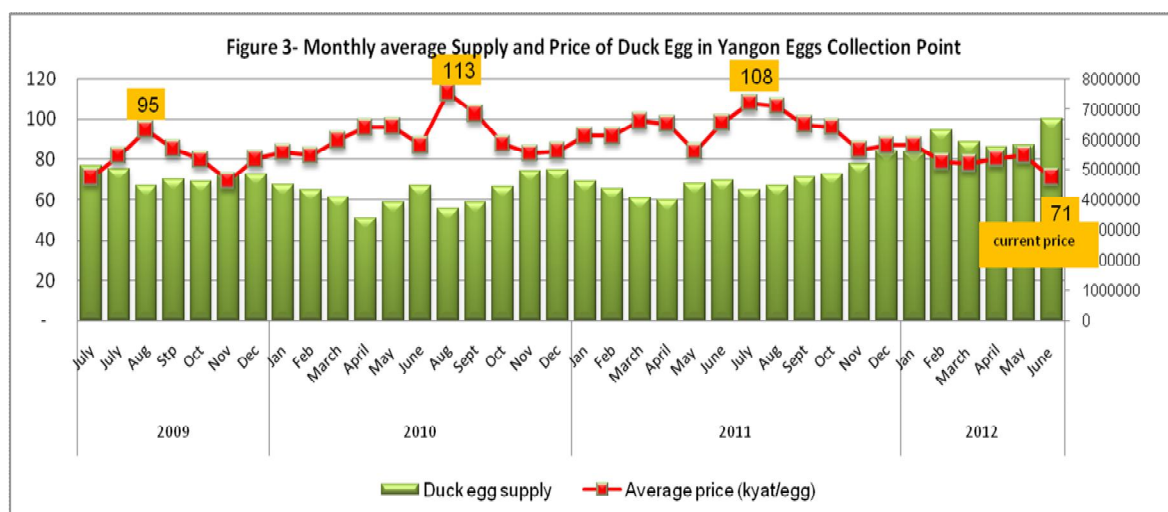
An average of approximately 5,000 breeding eggs is regularly incubated at Pyin Ma Pin hatchery, Bago Township, and Bago Division's Ywathar Gyi duck farm. Between 3,000 and 3,600 ducklings are produced weekly and its hatching rate is around 60%. On average there are 3,300 ducklings, with only about 500 heads distributed to private duck farmers in Nyaung Hna Pin, Yangon Township. The remaining heads of 2800 to 3000 ducklings are raised on the farm. Death and loss rate averages 12% and the birds can be sold out within seven weeks of breeding. Selling price of ducklings is 700 kyat/head.

Ywathar Gyi duck farm keeps a regular supply of meat-type ducks to control the selling price. This farm sells live birds directly for meat to popular restaurants in Yangon such as Shwe Be, Western Park, and Oriental House. The remaining ducks are sold to duck collectors from the live, mixed bird market (also known as the chicken and duck live bird wholesale market) at the farm gate price. Current price of a live weight bird is 3,000 kyat/viss.

The wholesale market for chicken and duck eggs in Yangon is at Mawtin Port, which is the main collection and distribution center managed by Eggs Collectors and Distributors Association under Livestock and Fishery Department. All the incoming eggs come from the Ayeeyarwaddy divisions, including: Bogale, Pyapon, Mawlamyine Gyun, Kyeiklatt, Dedaye, Labutta, Myaung Mya and Kyeik Pi Townships; and from the Yangon region, including: Dala, Tanyin, Thonegwa, Kyauk Tan, Hlaing Thar Yar Townships. Eggs are supplied daily and collected by spot market price at the port. Buying and selling functions are undertaken daily, mostly early in the morning. Members of the association meet weekly on Wednesdays.

Daily supply to the Yangon market ranges anywhere from 150,000 to 1,00,000 eggs. During the breeding periods in July and August, duck egg supply is lower than that of the normal season. In June 2012, the total supply of duck eggs to the Yangon market was about 7,000,000 eggs (more than 230,000 eggs per day). Consequently, the average price of duck egg decreased to 71 kyat/egg. Figure 3 illustrates the monthly supply and average price of duck eggs. Due to the incentive price (above 100 kyat/egg) in 2010 and 2011, production of duck eggs consequently increased in 2012. This extra

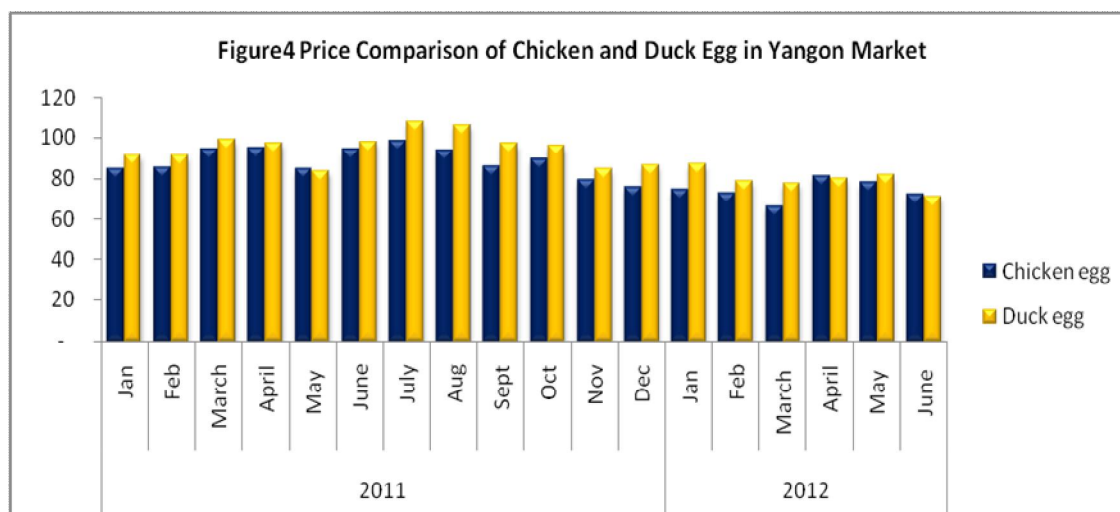
supply of duck egg to the Yangon wholesale market caused both wholesale and farm gate prices to fall.



From the Mawtin Port collection center, duck eggs flow to the various large fresh markets (wet markets), then directly to consumers or through retail shops. Yangon duck egg prices fluctuate depending on the price and supply of duck and chicken eggs. Prices also reflect the Yangon collection point's market price.

When buying eggs, the Yangon collection center separates duck eggs according to size: big, medium and small. The price difference between sizes is approximately five to ten kyat/egg. Size classification for duck eggs is done by weighing them: 300 moderate-sized duck eggs weigh approximately 20 kg, small eggs weight 19 kg, and large eggs can weigh 21 kg or more. Quality is determined by freshness and size, and diminishes with long storage periods or exposure to rain. Duck eggs typically last approximately 14 days in the dry season, which goes down to seven to 10 days in the rainy season.

The price of the duck eggs at the Yangon wholesale market is generally higher than that of chicken eggs due to its nutritional value and consumer preferences. However, beginning in April 2012, duck egg prices were lower than that of chicken eggs. Duck and chicken eggs are competitive commodities, so when the price of chicken eggs is high, consumer demand for duck eggs goes up. In contrast, when duck egg prices are high, demand for chicken eggs goes up. Price comparisons between chicken and duck eggs during 2011 and 2012 is illustrated in Figure 4. (Source: *Chicken and duck eggs distributors association, Yangon*)



The meat market at the local level is quite small. Selling duck carcasses for meat reduces the laying rate, and there is less demand for duck meat than for chicken.

2.2.2 Chicken Rearing

Under the Market Economy System, new breeds of chicken were introduced. Both parent and grandparent stock farms were set up to distribute day-old chicks (DoC) and layer through their own hatcheries extensively all over the country. Commercial broiler farming began in the years after 1988. Prior to that, meat production from chicken relied completely on local chicken for the majority, male birds from layer type, with rejected layers and semi-broilers derived from layer-type birds. The birds sold for meat are not in conformity with the standards set for today's true broiler birds. There was no opportunity at that time to import broiler breeds due to the economy.

Bringing broiler meat to market is much easier because it's cheaper than local chicken meat. Broiler chicken farming is a bit risky when the price of feed increases, and when there's a greater influx of fish and other food items into the market.

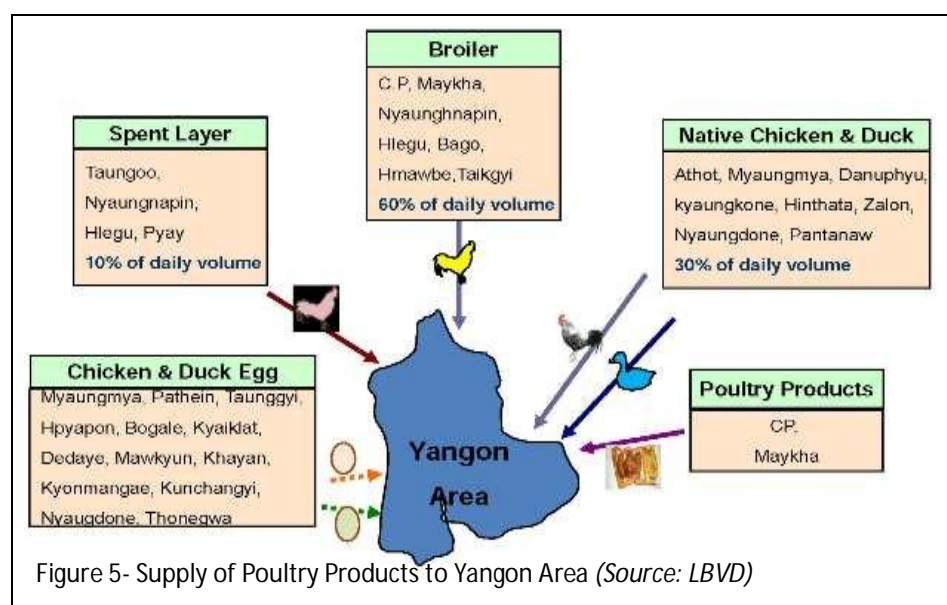
Charoen Pokphand (CP) is a Thai company operating in Myanmar. CP supplies DoC, commercial broiler feeds and commercial layer feeds with CJ Animal Feeds and Biochemical Products through Myanmar CP Livestock Co. Ltd. CP has also ventured into animal health products which it supplies through its established feed and chick distribution network throughout the country. Apart from CP, other broiler chicken commercial farms, as well as DoC suppliers, are: May Kha, Nay La, Kan Baw Za, MRC, Tatchaung and Ngwe Daung farms. Restocking DoC is achieved by purveying them locally or regionally (i.e. China or Thailand). Broilers are fattened for six to seven weeks (45 to 49 days) until reaching 2.0 – 2.4 kg, after which they are rendered. Semi-broiler chickens are also produced by UBL (Unified Broiler- layer), CP, Tatchaung and AA (Pyin Oo Lwin). Semi-broiler chickens need to be kept 70 days, with an end weight of 0.9 to 1 kg.

Layers produce anywhere from 250 to 270 infertile eggs per year. For commercial layers of chicken and ducks, replacement birds are imported from neighboring countries such as China and Thailand. Old breeds previously imported have been dominated by newly-introduced breeds, depending on the type of organization and proliferation of poultry companies; the breeds of chicken raised in one area differ from that of another. CP is now leading the layer market. Local authorities in different regions take an interest in the development of agriculture, livestock and do their best to improve conditions in the region and encourage self-sufficiency.

Local chicken breeds are overwhelmingly popular in rural Myanmar. Some of these breeds include: Hle Pyaung, Tanyin, Taik Kye, and Sittagaung. Village birds scavenge for food in backyards, gardens, orchards and vacant lots, and are almost always provided daily with water and non-purchased feeds such as broken rice, rice bran and food scraps. Birds are kept overnight under homes, in cowsheds, in trees, natural sheds and bird shelters, some of which are provided with nests for laying and brooding.

Commercial indigenous chicken production is practiced in Myanmar, but family poultry farming dominates indigenous chicken production in the rural areas. Local chickens are raised mainly for disposable income and are generally sold when extra money is needed, particularly during religious festivals.

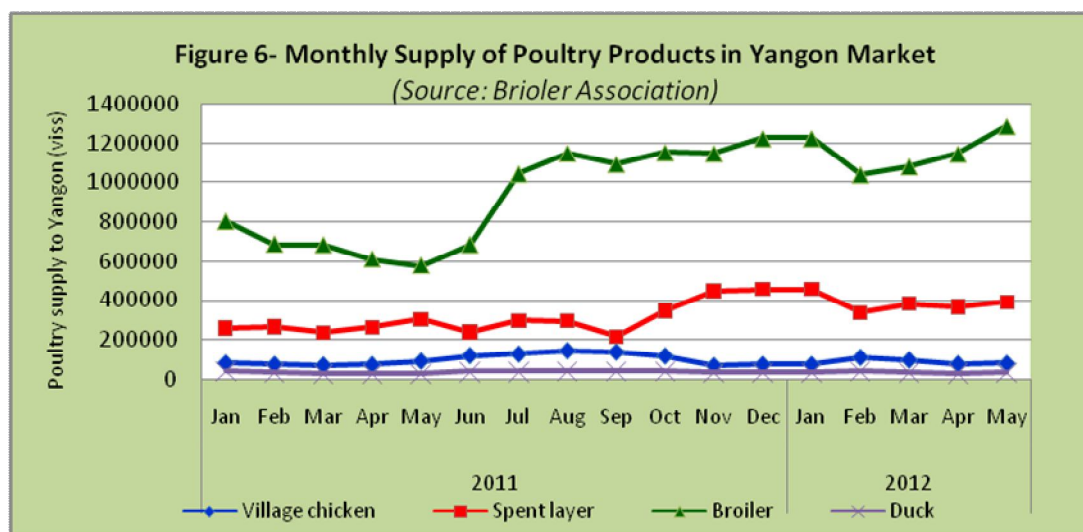
Similar to most of the poultry market, major chicken markets are in Yangon, Mandalay, Nay Pyi Taw and other large cities. Yangon is the largest consumption market. There is a large, live bird market in Yangon's Mingalar Taung Nyunt Township in which there are approximately 300 live bird collectors and distributors for broiler meat. The live bird market is functions well under the regulations of broiler association. Daily supply and price information are collected and recorded by the association. The association is also functioning in price formation and quality control in collaboration with township LBVD. Share of the daily supply of poultry products to Yangon market is demonstrated in Figure 5. (Source: LBVD, 2011)



As shown in Figure 5, about 60% of the daily supply volumes are broiler chicken supplied by CP, May Kha and private breeding farms from Nyaungnabin, Hlegu, Bago, Hmawbe and Taikgyi. Another 30% are native chickens and ducks supplied from the Ayeyarwaddy regions such as Atoht, Myaungmya, Danuphu, Kyaungkone, Hinthada, Zalun, Nyaungdone and Pantanaw.

With regards to chicken and duck eggs, there are two main channels for entering the Yangon market. The first channel is by roadway from Taunggyi, and from the townships in the Yangon Division such as Khayan and Thonegwa. Another channel by waterway from Ayeyarwaddy divisions such as Myaungmya, Patheingyi, Pyapon, Bogale, Kyieklat, Dedaye, Mawlamying Gyun, Kyonmangae, Kunchangone and Nyaungdone Townships.

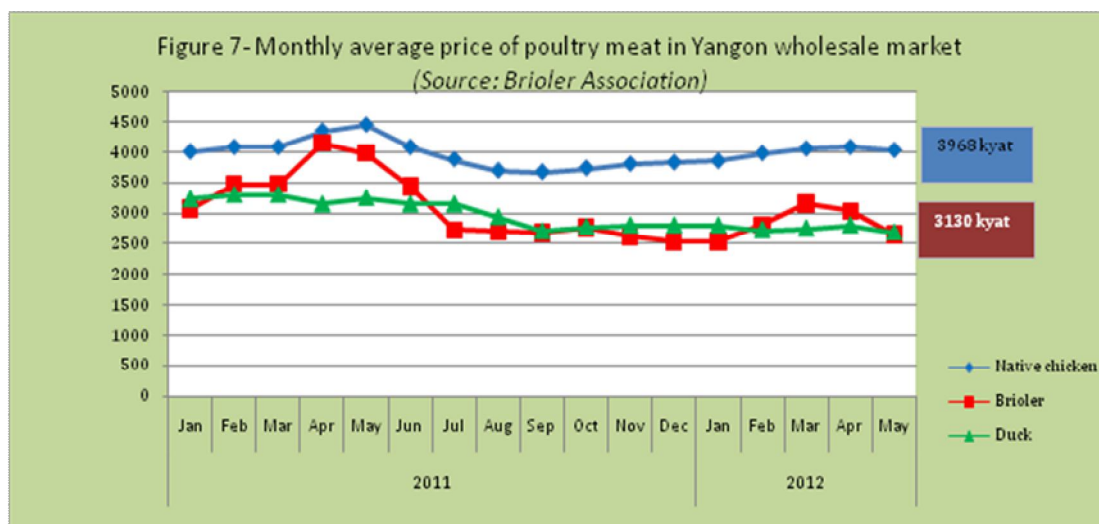
Figure 6 shows the monthly supply of poultry products to the Yangon market during 2011 and through the month of May, 2012. It is obvious that supply trends of native chicken and duck meat was quite steady, while the supply of broiler and spent layer chicken was dynamic. Starting from May 2011, monthly supply of broiler chicken gradually increased to the end of 2011. In February 2012, the supply of broiler chicken dropped to about 1 million viss and increased again in later months. In May 2012, the monthly supply of broiler chicken more than doubled from May 2011. This is due to the increased production of broiler chicken by commercial poultry farms such as May Kha and CP.



On the other hand, production and supply of native chickens are quite stable over time. Monthly supply of spent layer chicken was at a high of 400 thousands viss in December 2011. As a result, the price of broiler chicken meat decreased in 2012. In May 2011, broiler chicken was 4,000 kyat/viss, down to 2,500 kyat/viss in May 2012. Figure 7 illustrates the monthly average price trend of poultry products in the Yangon wholesale market. As shown, the supply of live broiler chicken in May 2012 was more than double the supply in May 2011. This is because in 2011 Parent Stock import was restricted due to the Bird Flu epidemic, and DoC production fell short of demand. But today, the broiler market has been significantly and rapidly expanded by commercial broiler farms.

The monthly average price of native chicken was 4,000 kyat/viss while that of the broiler chicken was approximately 3,100 kyat/viss. The price of native chicken is higher due to consumer preference, lower supply to the market and high nutritional value. Also, the demand for broiler meat has increased due to its high meat content and lower cost than that of local chicken.

Figure 7 shows the monthly average price of poultry products in the Yangon wholesale market.



From January, 2011 through May, 2012 the average price of live, native chickens was 3,968 kyat/viss, approximately 27% higher than that of broiler's price at 3,130 kyat/viss. It is obvious that the price of broiler chickens fluctuated more than that of native chickens. Supply of broiler chickens was lowest during April and May (see Figure 5), although demand due to traditional festival created high prices during this same time.

2.2.3 Political Environments for Poultry Production and Livestock Sub-sector

Given a lack of regulatory processes on meat processing and government infrastructure for animal health testing, there is insufficient support to impose higher standards. Access to export markets for frozen broilers and eggs is limited since production and lack of processing facilities are unable to produce the quality and quantity to meet the international standards. Currently only live animals are exported to neighbouring countries through both normal and border trade.

Import and commercial taxes on medicine and feed supplement additives increased the cost of livestock breeding and disease control. Import tax on veterinary medicine should be abolished to promote a healthy livestock industry. Direct foreign investment has not been sufficiently promoted in the livestock sub-sector, as well as for poultry production. It is also one of the constraints to develop the livestock processing industry. There is a need to encourage commercial livestock breeding to improve market access of the livestock sub-sector in international markets.

Development of processing industries on meat products hinges on development of technology and infrastructure facilities. Weaknesses in the educational system inhibit medium- and small-scale livestock breeding in rural areas. Genetic improvement of the breed stock requires technology development in artificial insemination and laboratory facilities.

III. VALUE CHAIN ANALYSIS OF DUCK IN THE STUDY AREAS

3.1 Market Segmentations

Market segmentation is defined as, “a selection of groups of people who are most receptive to a product.” Segmentation of the market is based on: demographic variables such as age, sex, race, income, occupation, education, household status, and geographic location; psycho-graphic variables include lifestyle, activities, interests, and opinions; product use patterns; and product benefits. In this study, the duck market is segmented based on the culmination of price, availability, and market demand.

1) Local Market at Village Level

Local markets are essentially markets in close proximity to the village or production farms. Demand for local markets depends on the availability of products. The purchasing power of consumers, as well as the number of sellers, are limiting factors due to lower population density. Some of the collectors who will be trading in townships or wholesale markets come to the local market on a regular basis.

2) Township Market Level

Township markets are larger markets situated in towns and urban centres, with variegated supply and demand linkages. The number of operators, though limited, is higher than local markets. These markets normally cater to a larger geographic location, and the volume of trade is high with more buyers as compared to the local market.

3) Wholesale Market

The wholesale market has a different set of norms and practices as compared to township and local markets. Quality is the highest concern in this market, compared to other market segments, and price awareness and competition are very high.

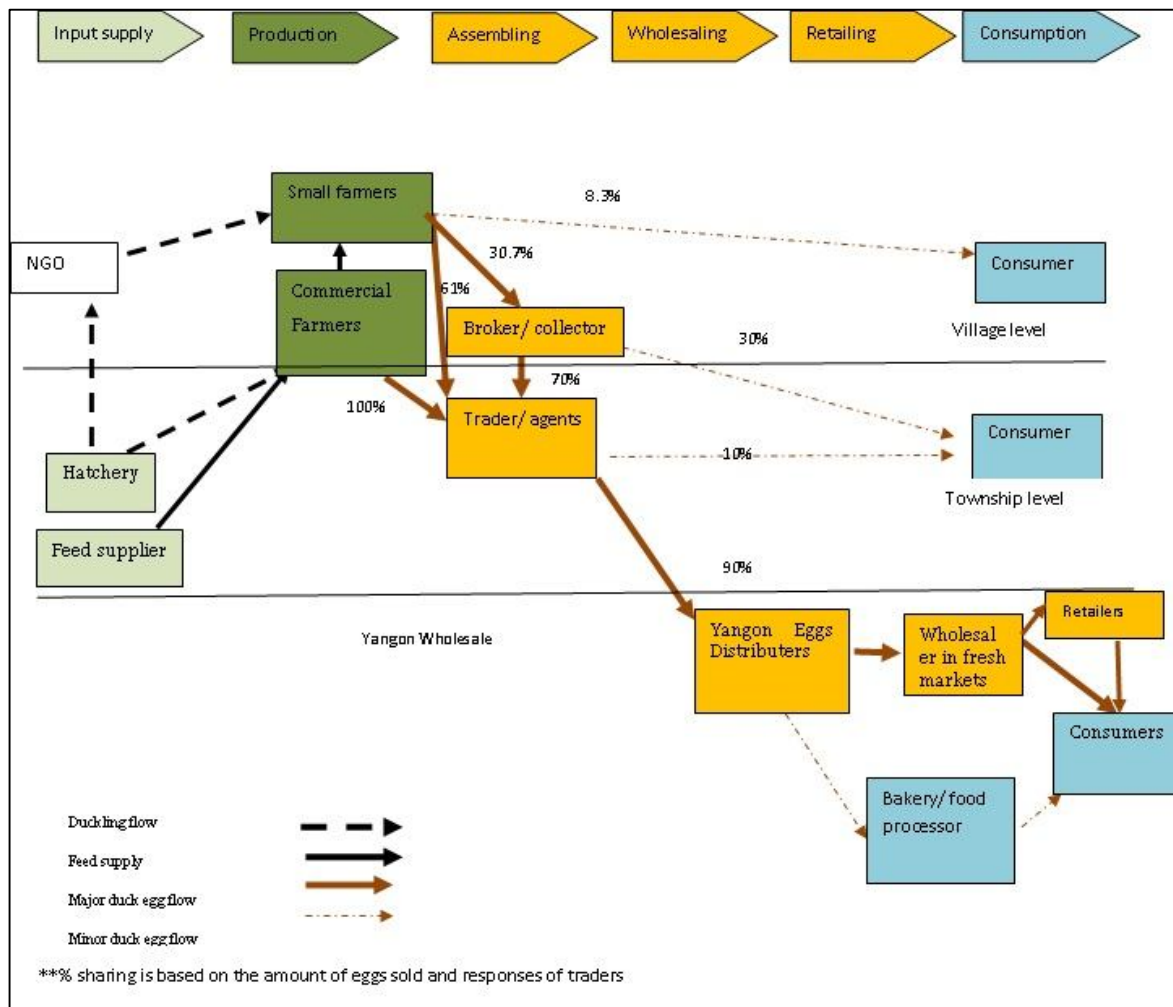
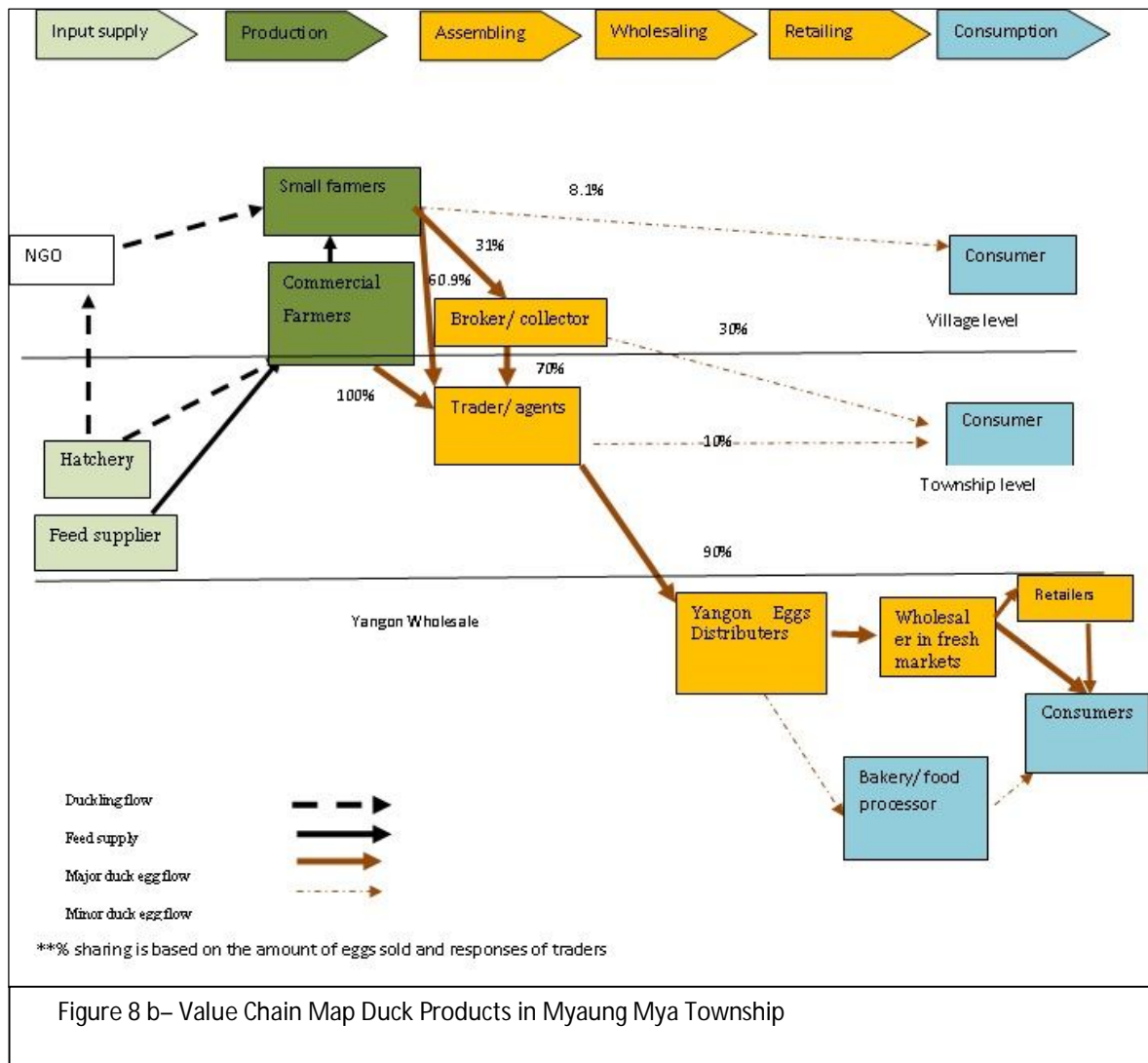


Figure-8-a Value Chain Map of Duck Products in Patheingyi Township

Figures 8a and 8b show the value chain maps of duck products in Patheingyi and Myaung Mya. As shown in the figures, the main functions of duck value chain include input supply (feeds, vaccine and ducklings), production, collection (assembling) and marketing (wholesale/ retail). The numbers and functions of actors in Patheingyi and Myaung Mya are quite different.



3.2 Actors along the Value Chain

Main actors in duck value chain are input suppliers, farmers (producer), collectors, traders (wholesale/ retail) and the consumers.

1) Input Suppliers

In Patheingyi Township, there is no hatchery or feed plant for ducks. Farmers in Patheingyi buy ducklings from other townships such as Myaung Mya through commercial farmers. Cost of ducklings, including the transportation, is 600 kyat/head.

In Myaung Mya Township there is a small number of duck hatcheries. Fertile eggs are incubated by heating and traditional methods and then placed in a hole heated by burning paddy. A total of 90 eggs are placed in the hole for approximately 17 days by alternating up and down layers four times a day. The total incubation period of duck eggs is 28 days, and the hatching rate is 80% from selected fertile eggs, most which are produced from their own farm. Sometimes they introduce parent stock from hatcheries in Yangon/Bago (in the form of fertile eggs) which seems to perform well.

Figure 9 Hatching practices of Duck eggs in Myaung Mya



Hatching is practiced mainly in monsoon season beginning in June and July, and continued through to January and February. Intensive care and management of incubation practices in hatching helps create higher profit margins.

If fertile eggs must be collected, even at 150 kyat/egg they will cost approximately 231 kyat by 65% of incubation. Selling price of female ducklings is 600 kyat/head, while males sell for 45 to 50 kyat/head. They cycle the incubation period five days at a time, supplying approximately 10,000-15,000 ducklings in one month.

Ducklings are sold to farmers at a price fixed by the hatchery, based on demand, incubation costs, etc. With less competition for ducklings in the area, they can control their profits. Farmers are required to

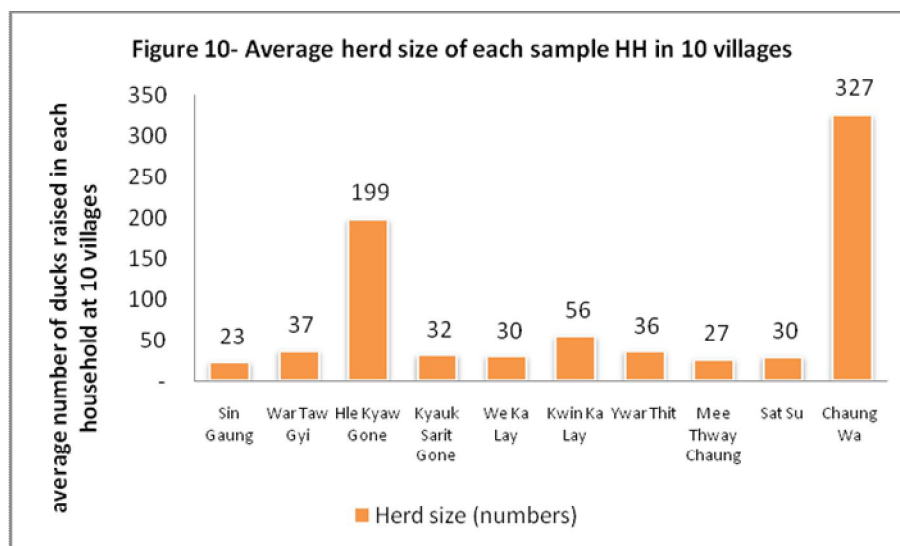
make a cash down payment. Ducklings are distributed mostly in nearby villages, to duck raisers in the downtown areas, and sometimes to duck farmers from Patheingyi, Hinthada, Nyaung U, and Labutta Townships.

The major constraint for hatcheries is that they cannot access good quality breeds that have higher laying rates. Although the duck farmers' association in Hle Kyaw U Village is interested in hatching, they do not have the proper technology.

Regarding the feed supply, the township's large-scale and rural, small mills are an important source of feed supply, utilising byproducts such as broken rice, rice bran and chaff. In Hlekyawgone Village, animal feed for chickens and ducks are purchased at Tha Latt Kwar rice mills, fertilizers shops and in Patheingyi. The price for one bag of broken rice, a staple for chickens and ducks, varies from 5,500 to 7,000 kyats depending on weight and quality. Commercial farms buy "Hnyit Phat" for duck feeding from other townships such as Myaung Mya, Ma U Bin and Nyaung U. There are two input shops in Hle Kyaw U Village which supply from these townships.

2) Farmers

Herd Size: Duck farmers in the studied area are raising ducks mostly for eggs. The numbers of ducks raised by farmers in selected sample villages are shown in Figure 10.



In Sin Gaung and War Taw Gyi Villages in Patheingyi Township, the average herd size of ducks in each household is 23 and 37 heads respectively, while Hle Kyaw U Village averages 199 heads. The average herd size of the sample household in Chaung Wa Village in Myaung Mya Township is 327 heads due to a commercial farmer who keeps approximately 1,200 heads of duck. The overall average herd size of ducks in 10 sample villages is 80 heads. Note that most of the respondents are beneficiaries of the project.

Breeds, feeding and management: Common ducks are a locally adaptable breed which is also called “Dat Be.” This breed seems to have originated in the East Indies, and its egg production capability is significant. These ducks have an upright posture with an almost straight neck. An adult male weighs approximately 2.1 kg, and the average adult female weighs approximately 1.8 kg.

A flock with approximately 200 heads can be managed by one person for grazing and feeding in a semi-extensive system. Most flocks are managed by family members, and out of 46 farms in 10 sample villages, only 9% of them hire labour to manage the duck flocks, specifically in Hle Kyaw Gone and Chuang Wa Villages. Hired labour ensures that the flock will not be lost, and costs 40,000-45,000 kyat per month. Feeding is usually done twice a day in addition to natural feeds available. Locally available feeds generally include broken rice, rice bran and chaff, prawn bran or prawn dust. Commercial farmers in Hle Kyaw Gone and Chuang Wa Villages use one of the supplementary feeds they call “Hnyit Phat” which is imported from Nga Thaing Chaung and Myaung Mya. Farmers believe that “Hnyit Phat” helps ducks lay bigger eggs.

Table 4 shows the calculation of the average monthly feed cost for duck farmers in 10 sample villages. For an average herd size of 80 heads per household, feed costs 62,154 kyat/month, which comes to 716 kyat/head/month. Feed cost calculations were based on responses from farmers for a one-month period of feed cost. Actual costs may be higher or lower, depending on accuracy of farmers’ estimations.

Table -4 Cost of feeds of laying duck for one month

| Village | No of heads | Cost to feed laying ducks (kyats/month) | | | | | | | |
|---------------------------------|-------------|---|--------|------------|---------------------|-------|-------|-----------------|-----------------|
| | | Broken rice | Bran | Hnyit Phat | Prawn/oyster/shells | Paddy | Chaff | Total feed cost | Cost/head/month |
| Sin Gaung | 23 | 1,675 | 1,300 | | 6,000 | | 2,405 | 11,380 | 495 |
| War Taw Gyi | 37 | 8,300 | 3,333 | | 8,000 | | 1,300 | 20,933 | 566 |
| Hle Kyaw Gone | 199 | 69,383 | | 75,556 | 52,767 | | | 197,706 | 994 |
| Kyauk Sarit Gone | 32 | 9,688 | | | | 5,625 | 2,438 | 17,750 | 559 |
| We Ka Lay | 30 | 7,500 | | | 5,419 | | 7,410 | 20,329 | 669 |
| Kwin Ka Lay | 56 | 11,513 | 3,000 | | 21,000 | 1,406 | 2,250 | 39,169 | 706 |
| Ywar Thit | 36 | 15,000 | | | 5,875 | 6,750 | 1,560 | 29,185 | 802 |
| Mee Thway Chaung | 27 | 10,050 | | | 8,250 | | 8,970 | 27,270 | 1,018 |
| Sat Su | 30 | 10,000 | | | | 3,750 | 4,550 | 18,300 | 617 |
| Chaung Wa | 327 | 29,483 | 13,265 | 188,990 | | 3,777 | 4,008 | 239,523 | 732 |
| Average | 80 | 17,259 | 5,224 | 132,273 | 15,330 | 4,262 | 3,877 | 62,155 | 716 |
| Average feed cost for 20 months | | | | | | | | 1,243,090 | 14,316 |

Farmers buy broken rice, chaff and rice bran from the mills in the township market, or in Hula Village if there is a small rice mill. Prawn or oyster dust, or dried prawn can also be purchased from the

township markets. Farmers from Hlekyawgone Village buy Hnyit Phat for ducks from commercial farmer or feed suppliers who import it from Myingyi Mya/Nyaung Done. Although farmers Mee Thway Chaung Village do not feed “Hnyit Phat”, their feeding cost was more than 1000 kyat head/month. This illustrates that breeding small herd sizes is not cost efficient. Natural vegetable and animal feeds are also available by grazing in the paddy fields and creeks. Local ducks prefer free-range grazing due to abundant natural feeds.

Housing for ducks is generally near grazing fields and consists of a bamboo floor, bamboo/net fencing and roofing made from nipa-leaf roofing. These require yearly repair and maintenance in anticipation of the monsoon season, and cost varies according to size and materials used.

Common duck diseases in the study areas include duck plague, Newcastle disease, diphtheria, whooping cough and diarrhea. Death and loss due to common disease is not a serious threat in most of the survey area, and veterinarians are seldom seen for treatment.

Production and Production Cost

Most farmers raise ducks starting with laying duck at a cost of 5,000 kyat/head, most notably in Patheingyi Township. This is because there is no hatchery within the township and a high percentage of death and loss occur during transactions. Commercial farmers start with DoC. The death and loss rate for laying age averaged 10%. Production costs for a head of duck breeding from DoC compared to laying duck is shown in Table 5.

Table 5- Cost and Return Analysis in average 10 villages

| <u>Sr.</u> | <u>Particular</u> | <u>Raising from DoC</u> <u>(kyat/head)</u> | <u>Raising of Layering</u> <u>(kyat/head)</u> |
|------------|--|---|--|
| 1. | Cost of bird | 700 | 5,000 |
| 2. | Feeding cost up to layering | 1,432 | 0 |
| 3. | Losses during 4 months (10%) | 213 | 0 |
| 4. | Feeding cost for layering duck for 1.5 years | 14,316 | 14,316 |
| 5. | Cost for labor | 0 | 0 |
| 6. | Cost for vaccine and care | 0 | 0 |
| | Total cost for 1 head of duck | 16,661 | 19,316 |
| | Total cost for average herd size of 80 heads | 1,332,880 | 1,545,280 |

The average normal laying rate among the 10 villages is 70%, and the yield goes down to 50% during the breeding period in July and August. The normal rate holds for about 10 months during the 1.5 years of a duck's laying life span. When weather, environment and feeding are favorable, the laying rate can be as high as 90%. Table 5 shows calculated costs and return of the duck farms based on 10 sample villages, and shows calculated cash costs as the only variable.

In truth, gross profit varied from village to village, from farmer to farmer and from time to time, according to the price variation and different production rates. Cost and return analysis of the average household in each village is shown in Table 6.

Table 6 Cost and Return Analysis of duck

| Village | Average herd size | Return from eggs (kyat) | | | | | Gross Profit (kyat/ 1.5 years) | Gross Profit (kyat/head/ 1.5 years) |
|------------------|-------------------|---------------------------------------|-------------------|----------------|-------------------------|---------------------------|--------------------------------|-------------------------------------|
| | | Average price farmers sold (kyat/egg) | Monthly sale (no) | Gross return | Total cost (kyat/month) | Gross Profit (kyat/month) | | |
| Sin Gaung | 23 | 100 | 485 | 48,450 | 24,050 | 24,400 | 488,000 | 21,217 |
| War Taw Gyi | 37 | 66.7 | 698 | 46,550 | 27,600 | 18,950 | 379,000 | 10,243 |
| Hle Kyaw Gone | 199 | 84 | 4,153 | 347,950 | 172,520 | 175,430 | 3,508,594 | 17,641 |
| Kyauk Sarit Gone | 32 | 67 | 727 | 48,450 | 13,667 | 34,783 | 695,667 | 21,911 |
| We Ka Lay | 30 | 70 | 616 | 43,092 | 19,245 | 23,847 | 476,940 | 15,689 |
| Kwin Ka Lay | 56 | 85 | 1,170 | 99,450 | 30,625 | 68,825 | 1,376,500 | 24,802 |
| Ywar Thit | 36 | 84 | 621 | 52,189 | 26,835 | 25,354 | 507,084 | 13,931 |
| Mee Thway Chaung | 27 | 95 | 553 | 52,526 | 22,320 | 30,206 | 604,110 | 22,541 |
| Sat Su | 30 | 78 | 575 | 45,022 | 18,300 | 26,722 | 534,442 | 18,015 |
| Chaung Wa | 327 | 78 | 7,848 | 608,220 | 326,963 | 281,258 | 5,625,150 | 17,202 |
| AVERAGE | 80 | 81 | 1,745 | 140,774 | 68,212 | 72,561 | 1,451,229 | 18,222 |

As shown in Table 6, a gross profit of approximately 18,000 kyat is possible from one head of duck within 1.5 year of its laying period.

The break-even price of an egg is calculated as follows:

$$\text{Gross Margin} = \text{Yield (y)} \times \text{Price (p)} - \text{variable cost (vc)}$$

$$0 = y \times p - vc$$

$$\text{Break-even price } P = vc/y$$

(a) Break-even price of egg at 70% laying rate-

$$\begin{aligned} \text{Break-even price } p &= 68,212 \text{ kyat for one month/ 1680 eggs} \\ &= 40.6 \text{ kyat/egg} \end{aligned}$$

(b) Break-even price of egg at 90% laying rate-

$$\begin{aligned} \text{Break-even price } p &= 68,212 \text{ kyat for one month/ 2160 eggs} \\ &= 31.6 \text{ kyat/egg} \end{aligned}$$

(c) Break-even price of egg at 50% laying rate-

$$\begin{aligned} \text{Break-even price } p &= 68,212 \text{ kyat for one month/ 1200 eggs} \\ &= 56.8 \text{ kyat/egg} \end{aligned}$$

Marketing for Farmers:

According to the duck farmer's interview responses, 49.1% of them sell duck eggs in the village to the primary collectors. Another 16.9% sell to nearby villages and to in-town retail, with the remaining 34% selling directly to the township market. In terms of quantity, over 60% of eggs are sold directly to the township market (from farmers to township wholesale traders), and about 30% of eggs are sold

to the primary collectors who collect in the village by farm gate price. The average price in the villages was 68 kyat/egg if the retail price of 90-100 kyat/egg was not calculated.

For farmers who sell directly to the township markets, transportation costs varied from 1-1.5 kyat per egg, when carried in a box of 500-600 eggs. Wooden boxes are rented by township egg collectors to carry eggs to market. If there are fewer than 500 eggs, farmers carry them using home-made baskets.

Farmers must sell according to the market price established by the egg collectors/traders in the wholesale market. Small farmers wait to accumulate a certain number of eggs over a three- to seven-day period, rather than selling a small number daily, to make going to market worth the travel costs. Eggs become rotten if the embryo is dead, or if it is kept for more than 14 days in the dry season (10 days in the rainy season). Also, farmers don't keep eggs beyond 14 days because they need cash to buy feeds and pay for home utilities. Selling is down with a cash down payment, with no advanced buying. Sometimes, however, the traders give a week's advance payment without interest to maintain good relationships.

Farmers grow ducks for up to two years, sometimes more, until the laying rate goes down. Ducks older than three years are sold for carcass with approximately 700-1,000 kyat/viss of live weight birds. Commercial farms can maintain a steady laying rate of approximately 81%.

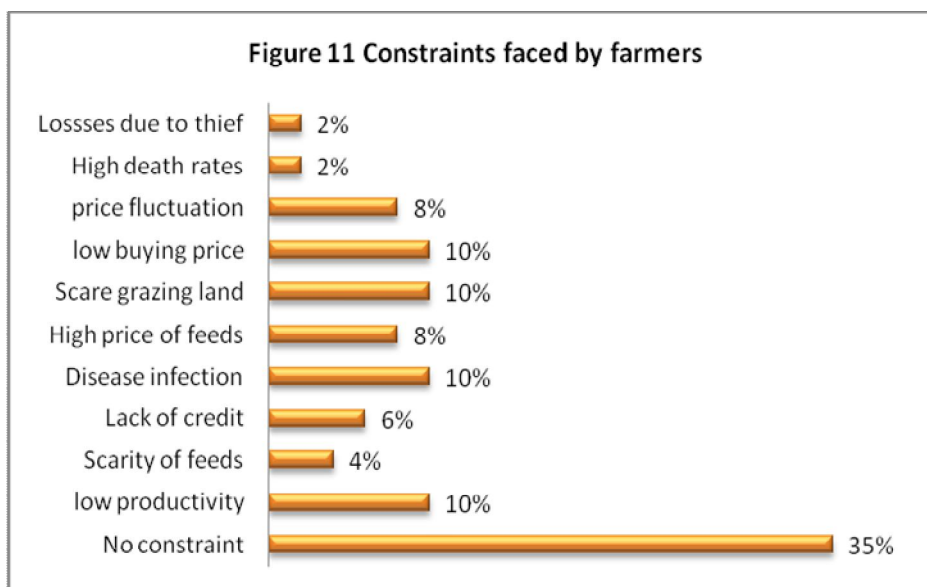
Market information for duck raisers is available mainly from middle men who collect eggs in the village. Most of them know the market price from the township markets, but not from the Yangon wholesale market. Even in the township market, few farmers know the daily rate and most only inquire when they're ready to sell.

Constraints for Duck Farmers

Generally speaking, there is no difficulty in duck production on a small scale. A large percentage of farmers surveyed mentioned that there is no difficulty in duck raising. Some duck farmers are less willing to increase production because due to the following constraints:

- Grazing land is scarce;
- Feed cost are high;
- Buying prices are low at the farm level;
- They cannot effort the initial investment;
- Disease; and
- Low productivity.

Responses of farmers interviewed regarding constraints in duck farming are shown in Figure 11.



3) Duck Eggs Collectors

In the study areas, duck eggs are primarily collected going house to house, and from township market supplies. On average, about 300-500 eggs are collected and supplied daily to the market or in one-day intervals. Boxes which can hold 500-600 eggs are rented from the township trader. Bicycle, motorcycle and boats are used to transport the eggs, and transportation costs vary according to the proximity to market.

Wholesaler/traders in the township markets collect eggs from specific stalls, with convenient access by water. Of the six wholesale collectors from Patheingyi and Myaungmya, all of them sell their eggs primarily to the Yangon market, with only a small amount sold retail to residents and restaurants in town. Wholesalers collect and transport eggs daily to the Yangon market. Daily Farmers set their own prices for the Yangon market and villages, and take care of their own transportation arrangements. Approximately 3,000 to 20,000 duck eggs per day are supplied to sample traders, with an average supply of about 3,350 eggs/day.

October and November are the best months to buy and sell, and trade volume decreases during the breeding period. Duck eggs, however, can be traded year-round. Farmers buy eggs from nearby villages either with a cash down payment, or advanced payment for the next sale, as they must sell five to seven days a week.

Most the collectors sell directly to wholesalers and distributors from Yangon by ship. Two kinds of market activities are found here. Some collectors sell according to the Yangon Distributors' market buying price and must take a chance on the products. Some must pay the price set by Yangon collectors which include agency fees of 0.8-1 kyat/egg. Transportation costs such loading, unloading and carrying boxes are set by the Yangon offer. The average marketing cost getting eggs from Patheingyi/ Myaung Mya to Yangon is shown Table (7).

Table (7) Cost of Transport to Yangon

| Item | Paheingyi- YGN (kyat/ box ²) | Myaung Mya -YGN (kyat/ box) |
|-----------------------------------|---|--------------------------------|
| Transportation cost (shipment) | 400 | 400 |
| Boxes | 0 | 0 |
| Labor | 200 | 65 |
| Losses (1-3%) | 0 | 0 |
| Supervising at port | 200 | 150 |
| Tax | 60 | 60 |
| Other | 100 | 100 |
| Total Cost | 807 | 775 |

One wooden box can hold 600 eggs and costs approximately 1,500-2,000 kyat, and can be reused several times. Yangon collectors provide boxes to the township's collectors. Egg trays are also used to prevent cracking and loss during transport. Grading by size is not done locally. The Yangon buyer assumes the cost of loss caused by cracking, typically around 1-3%, or 6-18 eggs. If there are a large number of rotten eggs, the collector from the township market covers those costs, specifically in Patheingyi, Myaung Mya and Bogale.

Approximately 10% of eggs collected sell to the traditional retail market. There is typically a 3-5 kyat difference in wholesale and selling prices between Yangon and the township markets.

4) Yangon Eggs Collectors and Distributors

There is a duck egg collection and distribution centre at Mawtin Port, and a 70-member association of egg collectors and distributors. When the ships from the Ayeyarwaddy Division arrive early in the morning, they open the market based on the volume of available duck and chicken eggs, taking into account seasonal fluctuations in demand. Daily price, supply and required marketing arrangements are supervised by the Eggs Collectors and Distributors Association.

Duck eggs collectors and distributors from Yangon buy eggs through commissioned traders from local markets in the Ayeyarwaddy Division, or make a cash down payment based on a specific market price.

If collectors buy from local wholesale markets in areas such as Pyapon, Myaung Mya, Pathien and Bogale, commission fees for traders is 2% upon the traded value. In this buying system, traders provide the transportation and ferry pick-up costs, handle the loading, unloading and carrying of boxes. A buying price is offered based on the Yangon harbor's price and marketing cost. When the

² 1 box contains 600 eggs

eggs reach Mawtin Port early in the morning, Yangon dealers transfer money via postal money order, possible to do in one day, arranged by the duck eggs association. Money transfer is easy and significant for both traders and collectors.

They also sell to wholesalers in the sub-townships in the Yangon Division. Major wholesale markets of duck eggs include Kyi Myin Daing, Hledan, Pazun Daung, Thirimingalar and Tarmwe. Food processing establishments that produce baked goods, salted eggs and Chinese traditional snacks are also important buyers for them, and retailers sometimes buy directly from the distributors.

5) Wholesalers in Yangon Market

Wholesalers from various fresh markets buy eggs distributors. Due to long-standing relationships among distributors and fresh market wholesalers, daily phone orders are often placed with negotiated market prices. Payment is in cash or sometimes left for a few days due to continuous buying and selling.

6) Retailers

Retailers in fresh markets and grocers are selling duck eggs as well as chicken eggs. Chicken eggs are more in demand than duck eggs, but some prefer duck eggs due to their nutritional value and the fact that they last longer. Cracked and rotten eggs are sold within one or two days. They buy eggs from fresh markets, rarely from distributors, and must buy and sell eggs with a cash-down system. Retail buying and selling in the wards and quarters is in small quantities. Eggs don't last long in storage, and must be sold within a week.

3.3 Price Difference along the Value Chain

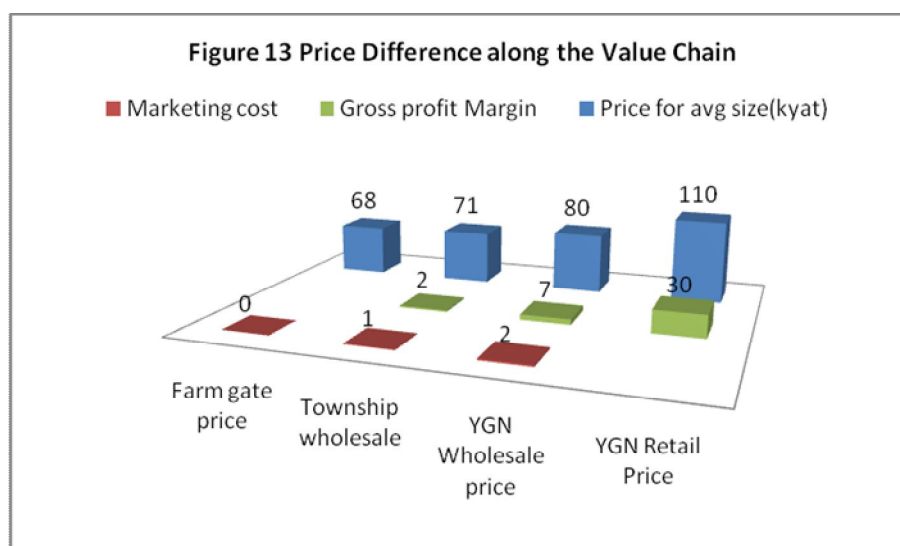


Figure 12 illustrates the price difference of an average-sized duck egg along the value chain. The collector's selling price is 3 kyat higher than a farmer's selling price. Marketing costs for collectors

ranges from 0 to 1.5 kyat/egg, and a township collector's profit margin is approximately 9 kyat/egg. Township traders and wholesalers assume more risk for advanced payment and unexpected transportation loss, as well as business regulation taxes.

Yangon distributors allow up to 1-3% for loss, but if the rate is higher than that the township traders will assume the loss. The Yangon distributors selling price is 80 kyat for an average-sized egg, and the price difference between Yangon wholesale price and retail price is 30 kyat. The distributor's margin is roughly 30 kyat/egg if sold retail. In truth, there are some middle men between the distributors (Yangon Wholesalers at the port) and the retailers who are wholesalers from various wet markets such as Kyi Myint Tai, Hledan, Tarmwe and Pazuntaung markets. Price difference between distributed price and retail price, sold at vendors and stalls is 110 kyat at the time of the survey.

3.4 Linkages Along the Chain

Regarding horizontal linkage within the same actors, such as among duck farmers, duck collectors and traders have well-established relationships. Among farmers, relationships consist of sharing market information, and sharing of ducklings from larger farmers to small holders. The horizontal integration of collectors from the township markets and Yangon wholesalers have strong linkages as well by daily supply of eggs from the local market and cash transfer from Yangon wholesale market. Regarding the price negotiation between the township and Yangon markets, the Yangon market is more dominant than at the township level due to the supply of duck eggs from Bago Division and chicken eggs being supplied from various markets. Among egg collectors at the township level, there is heavy competition to collect, so farmers are enticed by advanced payments a week in advance.

Vertical linkages among actors in the local market is closely related to the farmers, but is somewhat segmented in the township markets due to different selling patterns such as selling to Yangon markets and retailing in townships. Hatcheries in Myaung Mya are key players because they are the main source of locally adaptable and quality breeds which increase the production rate. But they are not involved in producing or marketing duck products. The relationship among hatcheries and farmers would be better if they deeply understood how to produce and market duck products to the better market outlooks. The relationship between duck farmers and hatcheries is found to be significant to a certain degree, but not effective because they don't ever collaborate to produce better quality breeds. However, there is no hatchery in Patheingyi and therefore the market is not affected.

Farmers allow duck raisers to graze in their paddy fields free of charge as they believe the herds of duck aerate their fields. Small herd sizes of ducks do not damage plants. Egg collectors are also dependent on certain functions of credit of the farmers. The Duck Egg Collectors and Distributors Association benefit the traders, but neglect the duck farmers. The co-operation of the Association and farmers is also very poor.

3.5 Opportunities and Challenges

Duck farming is a family-based, small business in rural area, not only for home consumption but also as a source of income, leading to food security. This study shows there is an opportunity to increase marketable egg products. Yearly increasing population and high demand from the Yangon market presents a great opportunity for duck farmers, with a few value-added for duck eggs such as salted eggs and lime preserved eggs. Large consumer demand for fresh products favours duck farmers if they can link with the major markets.

For other states and divisional markets such as Mon State, Tanintharyi Division, Mandalay Division, market feasibilities and facilities should be taken into consideration. If the transaction cost is equal to or higher than the price difference between the Yangon market and those expected market, trade is not a good option.

To increase profit margins along the value chain of duck, production costs have to be reduced, production (laying) rates must increase, and the volume traded to the Yangon markets needs to expand. Here, to achieve these situations the major constraints are found as follow. It is difficult for hatcheries to get good quality breeds of parent stock and there is a scarcity of grazing land for duck raisers, which limits population growth of birds. Feeding system management is also poor. Nutritional component in local feeds such as Hnyit Phat should be considered.

Other challenges include a lack of financial services for duck raisers, lack of veterinary health care and services, and a lack of extension education for duck raisers.

3.6 Recommendations

The following recommendations are made according to the findings of the value chain analysis on duck products. These focus on developing income generation activities, and improving livelihoods and food security of rural people (target beneficiaries.)

- *Introduce proper quality parent stocks and hatching practices* – through the duck farmers groups which have already formed. It is important to try to improve the quality of breeds by co-operating with the hatcheries, farmers, collectors and distributors.
- *Strengthen provisions of the Feeding System Management.* Due to difficulties associated with grazing land, proper methods of duck-raising should be introduced and could include and intensive growing system, rice-duck farming system. Also recommended is research and experimentation of local duck feeds through extension education.
- *Linking farmer groups with township-level egg collectors and feed suppliers.* This would strengthen relationships both vertically and horizontally along the value chain to address financial and technology constraints. It is needed to encourage group cooperation in developing commercial duck farms.

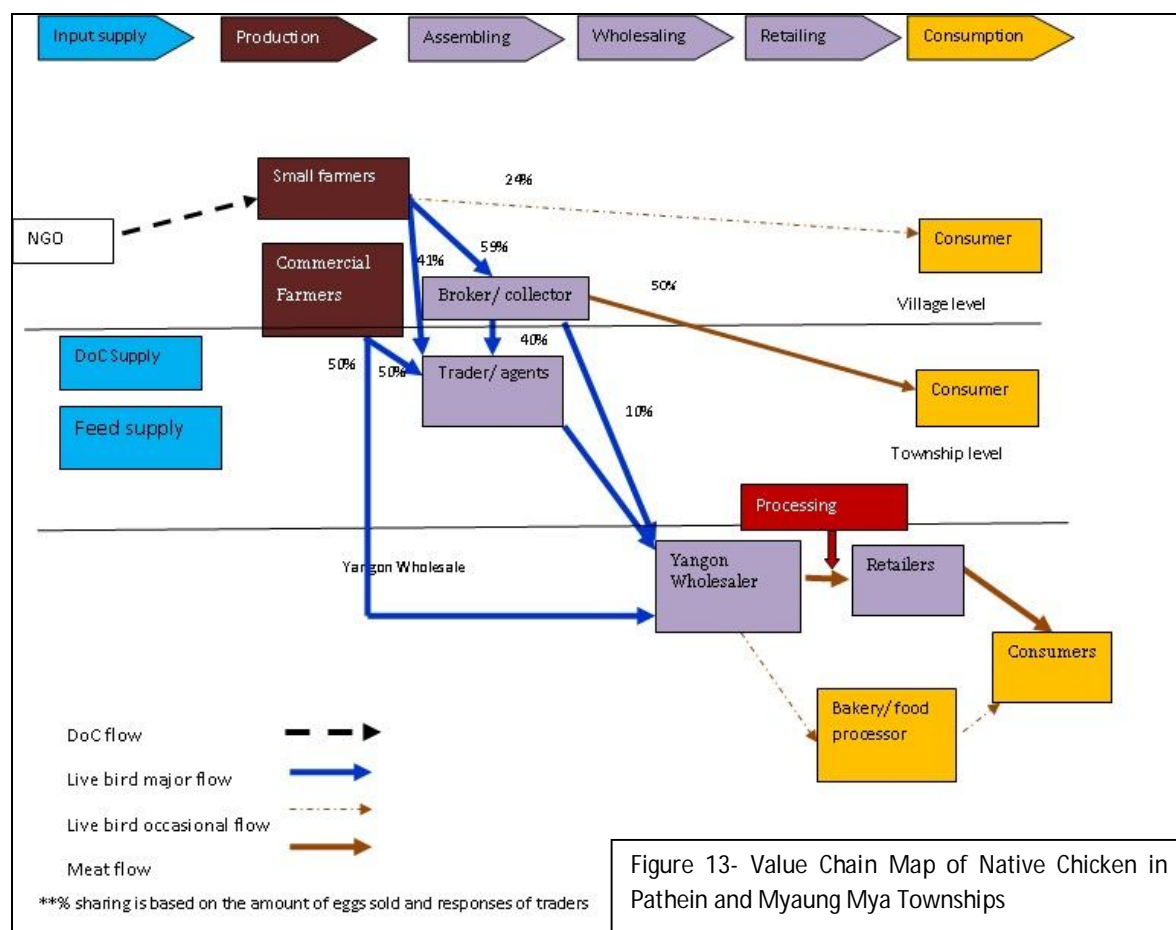
- *Initiation of duck egg selling after grading.* This is one method that would allow for better prices and improve quality at the farm level. In the Yangon market, there is a lot of competition from various townships and fewer price incentives for better quality and larger duck eggs.
- *Strengthen bio security of birds.* Free grazing is good for local breeds because they are naturally adaptable, but farmers should be careful of disease outbreaks.

From growers to township egg collectors, then on to the Yangon wholesale market, a normal supply chain forms. There are existing geographic and market conditions that are conducive to a smooth value chain.

IV. VALUE CHAIN ANALYSIS OF NATIVE CHICKEN

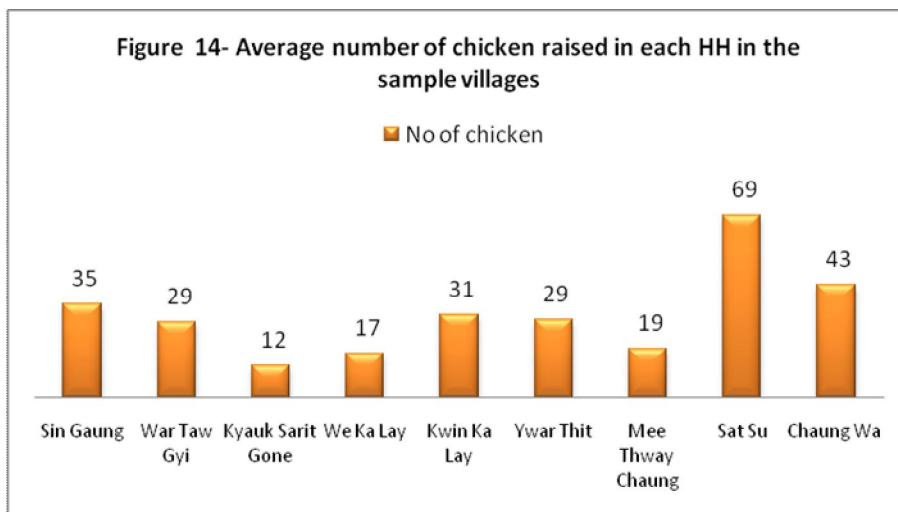
4.1 Value Chain Map

Along the native chicken value chain there are core functions similar to the duck product value chain, with the additional function of “processing to the meat” before consumption. The main actors along this value chain are small farmers, primary collectors and brokers, live bird traders and agents, wholesalers and retailers. The final, end market of native chicken is domestic consumption through retailers. Figure 13 shows the native chicken value chain map.

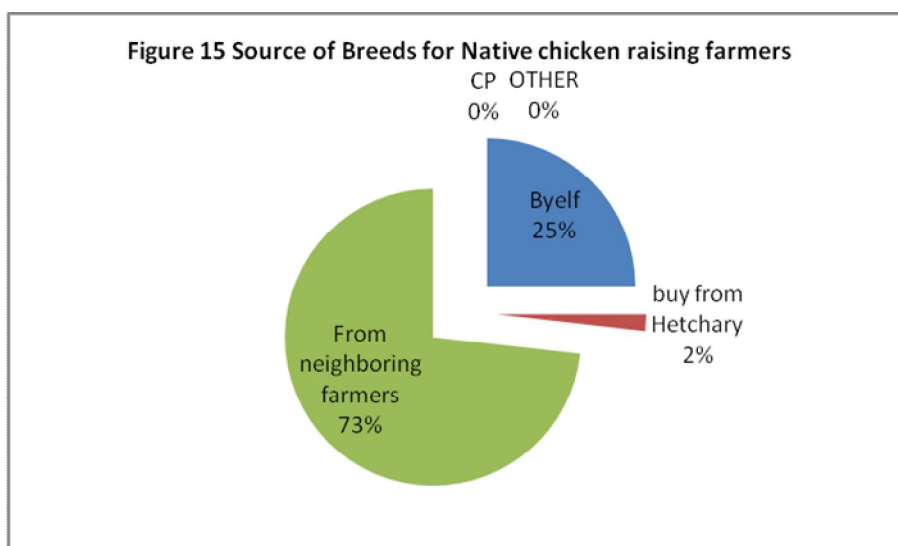


1) Farmers and Producers

This type of native chicken production system accounts for a little more than 80% of the Myanmar chicken population. Besides rice cropping, pig keeping, and fish/prawn raising, nearly all farmers keep native chickens in backyard farms. In the areas surveyed, about 98% of households raise native chickens. The average farm size in Patheingyi is 32 heads, and 33 heads in Myaung Mya. There is one commercial poultry farm (semi-broiler) in Hle Kyaw Gone Village. Figure 14 shows the average farm size of sample households in 10 selected sample villages.



As shown in Figure 14, the average farm size of native chickens is very small at about 12 heads minimum, and 69 heads maximum. An average flock consists of two to four hens, one or two cocks, about 10 chicks, and about five to 10 growers. Since mature hens and cocks are owned, there is no need to purchase DoCs because owned-stock hatchlings are readily available. Three egg batches are produced per hen per year, and from the 12 eggs laid on average per batch, one is consumed or lost while the remaining 11 are set under the hen for incubation and hatching. From these, roughly four or five heads will survive for up to two months, which represents 40% survivability. Figure 14 illustrates the source of breeds for native chickens.



Feeding and Management: Everyone (women, men and children) are responsible for tending the birds, devoting about 30 minutes per day to cleaning, watering and feeding. Out of 58 sample farmers, 53% of them feed twice a day, 38% feed three times a day, 7% feed only once a day, and about 2% feed several times in unlimited amount. Among interviewees, 86% feed broken rice, 26%

feed rice bran and a small percentage feed paddy, oyster shell, etc. Figure 15 shows the typical feeding system for local chickens in the study areas.

Rural village farmers are relatively uneducated regarding poultry diseases. Many of them are not able



Figure -16 Local Chicken in Patheingyi

to distinguish fowl pox, diarrhoea, and Newcastle disease in their flocks. Reportedly, 25% of chicks and 20% of growers die within one month, mainly from disease, extreme weather (heat stress), theft, and predators (vultures, rats, snakes). According to the survey results, any household can rear native chickens because they require minimum care. In Patheingyi and Myaung Mya Townships approximately 79% of farmers have experience with such diseases.

Most sample respondents have received livestock training by the project. However, a few households used to eat or sell the infected animals rather than destroying or burying them.

Cost of Production

Production costs of local chickens for an average of six months was calculated and is shown in Table 8. Most farmers interviewed are the beneficiaries of the project who have received cash grants to purchase local chicken. A semi-intensive system was encouraged and farmers built housing for the chickens. Production costs were calculated based on the average sample household in each village for six months before sale.

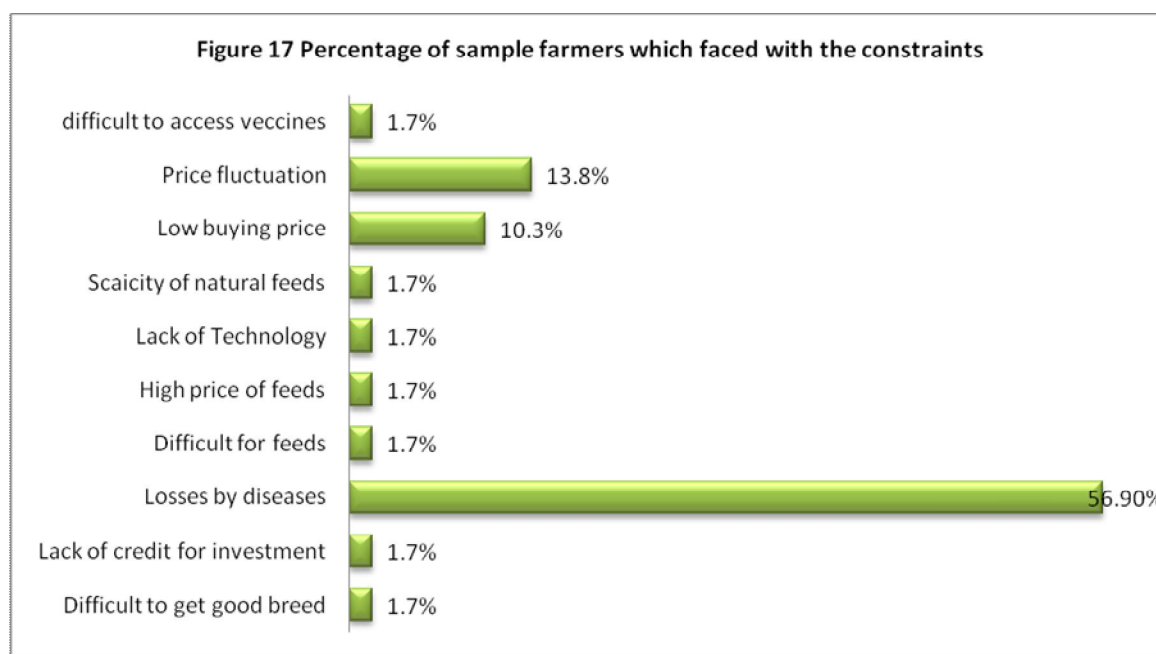
Table 8- Production Cost of Native Chickens in the Survey Areas

| Village | No of birds | Total cost of breeding (kyat/ 6 months) | | | | | | | Cost(kyat/head/ batch) |
|---------------------------------------|-------------|---|---------|-----------|-------|---------|--------|---------|------------------------|
| | | Breed | Feeds | Buildings | Labor | Vaccine | Others | Total | |
| Sin Gaung | 32 | 31,500 | 48,314 | 11,300 | | 8,000 | | 99,114 | 3,055 |
| War Taw Gyi | 29 | 26,800 | 58,689 | 10,000 | | | | 95,489 | 3,342 |
| Kyauk Sarit Gone | 12 | 28,000 | 31,875 | 3,000 | | | | 62,875 | 5,240 |
| We Ka Lay | 18 | 28,000 | 36,600 | 3,000 | | | | 67,600 | 3,714 |
| Kwin Ka Lay | 31 | 30,000 | 54,649 | 11,071 | | | | 95,721 | 3,116 |
| Ywar Thit | 29 | 31,500 | 57,188 | 11,000 | | | | 99,688 | 3,408 |
| Mee Thway Chaung | 33 | 35,117 | 91,500 | 4,667 | | | | 131,283 | 3,939 |
| Sat Su | 69 | 36,786 | 303,519 | 58,429 | | 4,000 | | 402,733 | 5,849 |
| Chaung Wa | 43 | 35,000 | 224,175 | 48,333 | | | | 307,508 | 7,235 |
| Average | 33 | 31,411 | 100,723 | 17,867 | | 6,000 | | 151,335 | 4,586 |
| Average cost excluding cost of breeds | | | 100,723 | 17,867 | | 6,000 | | 124,590 | 3,790 |

As shown in Table 8, the average cost of keeping a herd of local chickens by buying hens was approximately 151,335 kyat for 33 heads of chicken, which represents about 4,586 kyat/head. If calculated without considering the cost of breeds with natural brooding, the average cost is 3,790 kyat/head. If we assume that a hen can reproduce at least 10 offspring during its life span, and the average weight of a bird is 0.65 viss, then a total of 6.5 viss will be obtained. At a farm gate price of 3,800 kyat/viss, the farmer will gain 24,700 kyat in total revenue. Therefore, average gross profit of a hen would be 19,955 kyat during a six-month raising period. Clearly, the rate of return from native chickens is very high.

Approximately 41% of total sample interviewees sell to primary collectors, and 24% sell directly to consumers within their villages or nearby villages. The remaining 28% sell to wholesale traders in the township markets. About 31% sell to other villages themselves. Therefore, we can say that primary collectors are the key players for native chickens, as a large percentage of live birds are sold to the primary collectors.

Constraints Faced by Farmers



The bar graph in Figure 17 illustrates the percentage of sample interviewees who had experienced constraints. The highest percentage, about 57%, shows a loss of birds due to disease as their main constraint. Other constraints mentioned include price fluctuations of live birds (13.8% of respondents) and low buying price at farm gate (10.3%).

2) Assembler/Broker/ Primary Collectors



Chicken collectors on bicycles, often called middle men or brokers, usually purchase birds from farmers in about 5-10 villages per day. There are several middle men who supply birds to wealthier chicken merchants, who then sell these birds to larger chicken markets. In general, there is limited awareness among farmers of a Newcastle disease vaccination. In the native chicken market chain there is no monopolized dealer in either township. Village collectors play an important role

in native chicken marketing. They visit villages at frequent intervals to collect live village chicken. The live weight price is 3800- 4000 Kyat per viss prevail at the time of the survey.

Apart from collectors, processors or the retailers also buy native chickens directly from farmers and sell the carcasses at daily fresh markets. There are 30 to 40 retailers in the urban areas of Patheingyi and Myaung Mya and, on average, approximately 60 chickens are slaughtered for meat by each retailer. There are approximately five wholesale traders who export live birds to Yangon wholesale markets, as well as distribute within the township markets.

Table 9 shows the price margins of native chicken collectors and traders in the Myaung Mya and Patheingyi markets. The average gross margin of the traders is about 495 kyat/viss per live bird. Six-month-old chickens are the best age at which to sell, and preferred by village collectors as they typically weigh 0.6-0.8 viss. The highest price for chicken and duck prevails during the Thingyan festival in April.

Table 9 Price Margins of Native Chicken Collector in Myaung Mya and Patheingyi Townships

| Village /Market | Actor | Cost and Return Analysis of Chicken Traders | | |
|-----------------|-------------------|---|-------------------------------|---------------------------------|
| | | buying price (kyat/ viss) | selling price (kyat/ viss) | Gross Margin (kyat/ viss) |
| Htan Pin Gone | Primary Collector | 3100 | 3500 | +400 |
| Sin Gaung | Primary Collector | 3500 | 4500 | +1000 |
| AVERAGE | | | | +700 |

3) Wholesale and Retail Traders in Township Markets

Wholesalers in township markets collect live birds at a fixed location or through buying agents directly from the villages. Wholesalers determine the buying price based on the price set by the

Yangon live bird market and/or Myaung Mya and neighboring township markets, as well as by the volume of available supply. There is a high supply of native chickens from May to September. Wholesalers slaughter chickens by using hired labors, and have to take more risks than primary collectors or retailers. This is because there is a lot of competition among similar businesses, and they have the capacity to buy all the supplied birds even though the price is unfavourable for them. They must keep live birds for a few weeks before processing. Wholesalers sell not only to consumers but also to retailers.

Table 10- Price Margins of Native Chicken Traders in Myaung Mya and Patheingyi Markets

| Village /Market | Actor | Cost and Return Analysis of Chicken Traders | | |
|-----------------------------|---------------------|---|-------------------------------|-----------------------------------|
| | | buying price (kyat/ viss) | selling price (kyat/ viss) | Gross Margin (kyat/ viss) |
| Myaungmya | Wholesale Trader | 3500 | 3800 | +300 |
| Htunpalun | Wholesale/ retailer | 3700 | 4000 | +300 |
| Myaung Mya | Wholesale Trader | 3500 | 3800 | +300 |
| Myaung Mya | Wholesale Trader | 3500 | 3900 | +400 |
| Myaung Mya | Wholesale Trader | 3500 | 3800 | +300 |
| Myaung Mya | Wholesale Trader | 3500 | 3800 | +300 |
| Shwenagar | Wholesale/ retailer | 3500 | 4000 | +500 |
| Myaung Mya | | 3500 | 3800 | +300 |
| Mayangone | Wholesale/ retailer | 3500 | 4000 | +500 |
| Myaung Mya | Wholesale/ retailer | 3400 | 3800 | +400 |
| Myaung Mya | Wholesale/ retailer | 3650 | 4000 | +350 |
| Myaung Mya | Wholesale/ retailer | 3600 | 3800 | +200 |
| Kanhla | Wholesale/ retailer | 3500 | 3800 | +300 |
| Patheingyi | Retailer | 4560 | 6000 | +1440 |
| Patheingyi | Wholesaler | 4000 | 4500 | +500 |
| Patheingyi | Wholesaler | 3650 | 4500 | +850 |
| AVERAGE BUYING PRICE | | 3735 | 4560 | +495 (13%of investment) |

Average net profit margin of collectors and traders is calculated as follows:

| | |
|------------------|--------------------|
| Selling Price | - 4,560 kyat/ viss |
| Buying Price | - 3,735 kyat/ viss |
| Marketing Margin | - 495 kyat/ viss |
| Marketing Cost | - 100 kyat/ viss |
| Profit Margin | - 395 kyat/ viss |

4) Processors

Most chickens are sold as meat after slaughtering. Wholesale traders in township markets typically do their own slaughtering, then the meat is sold at different prices for different parts of the body. The retail price of different parts of native chickens is as follows:

| Description | Price (Kyat/ viss) |
|------------------------------|--------------------|
| 1. Thighs and breast (pure) | 7,000 |
| 2. Wings | 5,500 |
| 3. Throat, head and legs | 3,500 |
| 4. Liver, Heart and Gizzard | 5,500 |
| 5. The whole body of chicken | 5,500 |
| 6. Gut/ intestine | 1,000 |

Average turnover in processing local chickens is approximately 85% of the live weight. This means that if one viss of live bird is slaughtered, about 0.15 viss of feather weight will be deducted, and 0.85 viss of meat will be returned. Since the price of a whole body chicken is 5,500 kyat, the return on processed meat (85%) is 4,675 kyat/viss. If the wholesaler or retailer bought it at a price of 3,500 kyat/viss, their gross profit would be 1,175 kyat/viss, or about 33.6% of their initial investment.

There is one home-based business for processing CP product chicken in Tae Gyi Gone. They produce chicken sausage, chicken meat balls, chicken meat squares and chicken cashew nut on a small scale which is dependent on visitors to Ngwe Saung. The rate of selling products is relatively lower in the rainy season than the hot season. Even though the Yangon market provides an opportunity to sell their products in Yangon, they can't compete with the price of low-quality products in Yangon.

1. One example of the process is: the meat of a chicken bought at the Patheingyi market, and specially ordered to sell only the flesh without the bone and viscera, is chewed by the electronic meat chewer. Secondly, it is mixed with ingredients such as sugar and salt. Thirdly, the mixed meat is put into goat tripe and dried in the sun, or grilled in a big, cement stove if the sky is cloudy. Finally, the dry product is put in a plastic bag, which carries between 10 and 70 kyat tar.
2. As a raw material, goat tripe is the most fundamental in making chicken sausage, the main customer being a restaurant in Patheingyi. It is ordered from Yangon and one tripe knot can be made from 20 to 25 strings, with 25 knots, and costs 500,000 kyats. The specially-ordered chicken meat costs 5,500 kyats for one viss. There are four workers who paid between 20,000 and 30,000 kyats per month, the range reflective of experience and level of responsibility.
3. The major constraint is the scarcity of goat tripe. Cashew nut is available in Patheingyi. Except chicken sausage, other chicken-related products can be produced with chicken, but none are as popular as sausage. The price for one viss of chicken sausage, chicken ball meat balls and flat is 17,000 kyats, and chicken cashew nut costs 18,000 kyats.



Figure 19 Value Added Products of Chicken in Patheingyi Township

There is only one value-added processor, a chicken sausage producer in Myaung Mya, located in the downtown area that has been in business for 20 years. They produce more pig sausage than chicken because there is less demand for chicken sausage by consumers in town. They have easy access to the raw materials needed to make chicken sausage. They can purchase as much goat viscera as they want because there are many goat breeders in Myaung Mya. The price for one viss of goat viscera is 2,500 kyats, and pure meat of CP chicken is 6,000 kyats. For making one viss of chicken sausage (the same way it's made at Patheingyi's New Zibain), they use 0.1 viss of goat viscera and 1 viss of CP chicken meat. The necessary materials for chicken sausage come to one viss, which costs 6,250 kyats, and is sold at 18,000 kyats. They make chicken sausage only as they receive orders, as the order should be made three days prior to the desired delivery date.

5) Wholesaler and Distributors in the Yangon Market

There are approximately 50 wholesalers and distributors operating about 60 stalls in the Mingalar Taung Nyunt live bird wholesale market in Yangon. The broiler association, YCDC, and labor association are working together to ensure the functioning of the market. The broiler association controls the price formation of live poultry products, records daily supply and price information, and reports this market information to the related government ministry.

The local chicken market opens at 10:00 a.m. as sellers arrive from the various markets. The supply of local chicken is the highest during the months of June, and July through December. In the summer season, local chicken supply is less.

4.2 Strengths

In the market, native chickens are preferred because of their distinctive taste. Farmers and traders claim that native chickens are in highest demand because consumers prefer them to the hybrids. Farmers have equal bargaining power over the price of chickens. This means that the buying price of chicken is negotiated between the farmer and the buyer. This allows the farmer to adjust his selling price depending on production and marketing costs. These costs, along with profits, can be compensated for when setting the buying price. It should also be noted that the nutritional value of native chickens is relatively higher than that of hybrid breeds.

4.3 Challenges

The major challenges encountered by local chicken producers at the village level are:

- 1) Lack of opportunity to upgrade to the local breeds;
- 2) Lack of proper bio security in the villages;
- 3) A high percentage of death and loss of animals (more than 60%);
- 4) Lack of processing practices handled directly by farmers, and a large percentage of profit is taken by butchers and processors; and
- 5) Poor technical knowledge to reduce mortality rates and control diseases as most farmers prefer to breed using traditional practices.

Herd sizes of farmers are quite small at the village level, which leads to more home consumption and less market incentive for increased production. Looking at total production, more than half the chickens produced were consumed by farmers rather than sold to traders. This is largely due to the fact that chicken farmers lack access to markets due to long distances, and therefore high transportation costs in taking their chicken to the township markets. It's much more affordable to carry chickens in small numbers rather than large quantities.

During the study, farmers often mentioned that they would rather eat a chicken than bring it to the assembler or to the township market. Another challenge in the marketing of chicken is the relatively high rate of loss incurred due to weight loss and mortality during transport from the villages to the towns. The average value of losses sustained by farmers in transporting chicken is up to 0.2 viss.

4.4 Other Key Findings

It was also determined that there is a high mortality rate (60%) in raising native chickens. This is especially true during the rainy season when the animals are prone to disease. It is further aggravated by the fact that farmers lack technical know-how in preventing this. Poor bio security is also a key factor for lack of native chicken production in the study areas.

On the other hand, the marketing margins of the traders averaged approximately 13.5% in gross. If the opportunity cost of investment and other marketing costs were considered, at least 10% of the investments will be gained as profit. The retailers and wholesalers have a rate of investment of 33.6%.

4.5 Recommendations

Based on the findings of this study, the following recommendations are offered:

- ❖ *Encourage native chicken-raising as a side-income and as part of the household's nutritional value.* Local chicken production should be developed as an extra income opportunity, especially for pro-poor and poor. An income of approximately 200,000 kyat can be earned for one family within 1.5 years by keeping 10 hens.
- ❖ *Semi-broiler types should be introduced for commercialization of native chickens.* In considering commercialization, local chickens do not adapt well in an intensive system with completed formulated feeds and fencing.
- ❖ *Strengthen technical knowledge to the beneficiaries* such as breed selection among the local breeds they grow, feeding system management and animal health prevention practices.
- ❖ *Introduce food processing techniques for income generation.* Food processing techniques and practices are lacking in rural areas. In villages where the market is accessible due to good transportation, food processing and value-added products of poultry should be introduced.
- ❖ *Strengthen vertical linkage of farmers and township wholesalers.* This not only supplies poultry products, but other relationships can be developed for the expansion of the native chicken market and as a source of credits.
- ❖ *Establish an organized selling system* for the farmers so that they have better bargaining power. It may be possible that assemblers and wholesalers could be encouraged to visit villages regularly to purchase birds.
- ❖ *As a bio security measure, prohibit chicken collectors from freely entering villages with chickens collected from other places.*
- ❖ *Demonstrate model farms of semi-intensive native farms to promote local chicken production.*
- ❖ Lastly, improving slaughtering and processing plants should be done at the township and Yangon wholesale market levels, as this is a major hindrance in the marketing of native chickens. If cold

storage and processing facilities were feasible, the native chicken market could be extended to the export markets.

V. REFERENCES

1. *Dr. Khin Hlaing*, Joint Secretary (1) Myanmar Livestock Federation/ Livestock Industry Overview in Myanmar/ 2011
2. *Jon Hellin and Madelon Meijer*, Guidelines for Value Chain Analysis
3. Ministry/ Agriculture in Brief, 2010/ MOAI
4. Ministry/ Statistical Year Book 2008
5. Ministry/ Agriculture at a Glance 2011
6. U Tin Maung Shwe/ Agricultural Background Paper for Development Options
7. U Kyaw Myint/ Agricultural Market Information and Marketing Extension
8. South African Network 2006/ Making Value Chains Work Better for the Poor
9. CESVI/ 2011/ Thi Mar Win/ Market Analysis of Agricultural and Non Agricultural Products
10. Dr Chit Swe, Livestock Training Manual/ Golden Plain Agricultural Products Co-op Society
11. Dr Saw Hla Phyu/ 2012/ Fundamental of Chicken and Duck Rearing Hand Book

ANNEX 1: TERM AND CONDITIONS

| | |
|---------------------------|--|
| ❖ Variable cash costs | Costs where actual money is involved. |
| ❖ Revenue involved | The earnings from the sale of farm produce where actual money is involved |
| ❖ Hired labour | The cash expense for engaging the services of farm labourers |
| ❖ Home consumption | The value, non-monetary in nature, of the farm produce consumed by a farmer and their family |
| ❖ Losses | The value, non-monetary in nature, of the damages and spoilage sustained by the produce |
| ❖ Market information | Basic price and supply information of major commodities from all markets: assembly, wholesale and retail. |
| ❖ Marketing channel | The inter-organizational system composed of interdependent institutions tasked in moving the product from production to consumption. |
| ❖ Marketing margin system | The difference in prices between different levels of the marketing system |
| ❖ Opportunity cost | The price of foregone opportunity in the use of the capital or labour invested in the enterprise |
| ❖ Profit margin obtained | The difference between the cost of production and the selling price obtained |
| ❖ Family labour | Also called own labour. The value, non-monetary in nature, of work (valued in working days) by the farmer and their family |