
Australasian Agribusiness Perspectives

2018, Volume 21, Paper 3

ISSN: 1442-6951

The Local Chicken Value Chain in Cambodia: Constraints and Challenges of Local Chicken Smallholder Producers

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Abstract

Local chicken is one of the most important sources of income for Cambodian farmers. The majority of farmers in rural areas raise local chickens as a second source of income besides rice production. However, local chicken production is on a small scale, and the majority of producers still apply traditional raising methods. There is high demand and better prices for local chickens but there is an insufficient supply and Cambodia needs to import chicken meat from other countries to meet domestic demand. Smallholder producers face many constraints such as lack of market power, limited access to market information, high production costs, longer duration investment compared to broilers and partly-hybrid chickens, and diseases. However, these issues can be addressed by working cooperatively amongst smallholder producers, with support from the public and private sectors by improving raising techniques and hygiene in local chicken production, introducing local free-range certifications and providing small producers with access to market information.

Key words: Local chickens, smallholder producers, value chain, high input costs, markets

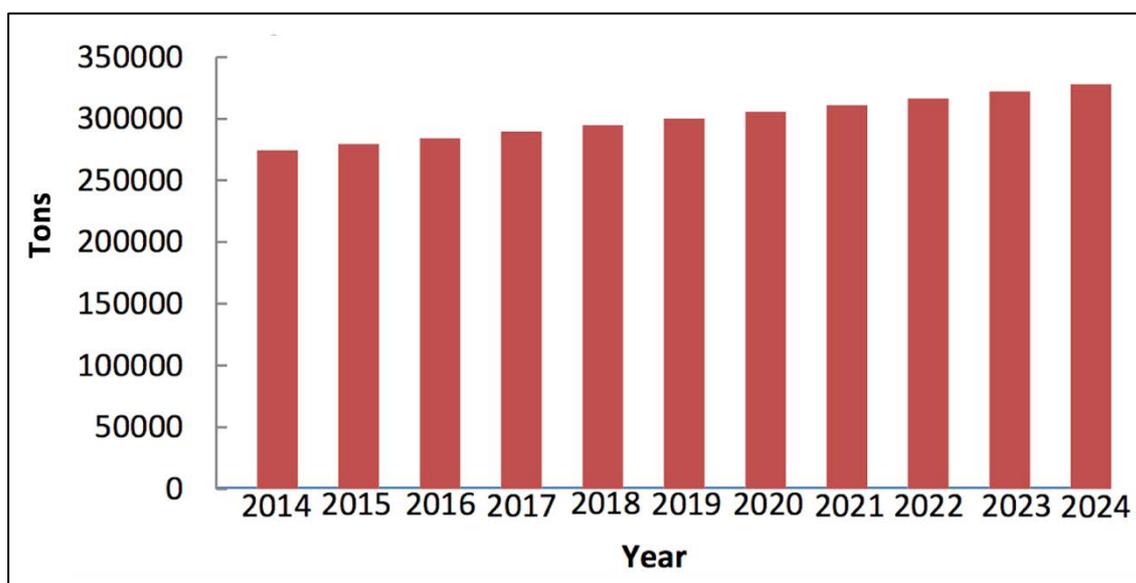
Introduction

In Cambodia, the agricultural sector plays an important role in reducing poverty and boosting economic development. It creates jobs and generates income for people nationwide, especially farmers in rural areas. In 2014, agriculture contributed 31.5 per cent to Gross Domestic Product (GDP) and livestock about 14 per cent to Agricultural GDP (MAFF, 2014). It is estimated that around 80 per cent of the total population in Cambodia live in rural areas, and about 51 per cent of them depend on agricultural farming (Heifer International, 2017).

Due to the country's population growth (with the annual growth rate of 1.8 per cent) the demand for meat has increased. The development of the livestock sub-sector has the potential to support this growth and contribute to poverty alleviation and food security in Cambodia (DAHP, 2015). In 2015, 57 per cent of total households, accounting for roughly 1,897,000 families, were involved in livestock and poultry production. Chicken raising makes up the vast majority of animal production, accounting for 53 per cent, whereas 38 per cent is accounted for by ducks and 6 per cent by cattle (National Institute of Statistics, 2016, p. 28). DAHP (2015) estimates that the demand for meat will gradually increase from 274,479 tons in 2014, to 328,085 tons in 2024 (Figure 1). Similarly, Emerging Markets Consulting (2014) projects that chicken meat demand will also grow gradually. Therefore,

this is an opportunity for local chicken smallholder producers to expand their chicken-raising production to improve their livelihoods.

Figure 1: Projected meat demand in Cambodia from 2014 to 2024



Source: DAHP (2015)

The Chicken Industry in Cambodia

Chicken raising is an important part of agricultural farming and its long-term development. According to People In Need (2015), in Cambodia there are three types of chickens reared (Table 1):

- Local breeds (local chickens): local breeds are commonly free ranged by smallholder producers. They are mostly raised due to their good adaptation to local weather (Figure 2).
- Part hybrids (three-crossed breeds or Moan Bei Sah): these are crosses of hybrid and local breeds. They are commonly used in many restaurants and hotels as they look similar to local chickens; although the price is lower than local chickens, the taste is not preferred by consumers (Figure 3).
- Full hybrids (Broilers): these are bred from different pure breeds and raised for egg and/or meat production on a large scale. Although this chicken meat is used in many fast-food restaurants, they are least favoured for household consumption (Figure 4).

The demand for local chickens is higher than that for part hybrids and broilers due to good meat quality and taste. Some 80 per cent of local people prefer to consume local chickens. However, the price of local chicken is much higher than that of the other two chicken breeds, and the growing period is very long. While local chickens take between four and six months, broiler chickens take only one and half months (People In Need, 2015).

Chicken production, of both local chicken breeds and hybrid chicken breeds (broilers), is expanding rapidly. Local chicken production increased by about 7 per cent from approximately 17 million chickens in 2014 to around 19 million chickens in 2015 (Figure 5). Even though the number of commercial (broiler) chicken farms slightly decreased from 621 to 618 farms, broiler meat production grew by 30 per cent from 2014 to 2015. In contrast, commercial chicken egg production fell by 24 per cent from 1 million chickens to 0.77 million in 2014 and 2015, respectively (Figure 6) (MAFF, 2015). People In Need (2015) points out that most of the local chickens are raised on a small-

scale basis by smallholder farmers, accounting for 85 per cent, and the rest are reared in large scale production by farm entrepreneurs.

Table 1: Comparison of three different types of chicken breed characteristics in Cambodia

Features	Local breeds (Local chickens)	Hybrid	
		Part hybrids (three crossed- Moan Bei Sah)	Full hybrids (Broilers)
Meat	Lean and tough	Leaner but not so tough	More fat and soft
Meat taste (according to local preference)	Good	Medium	Poor
Body size	Small	Small/Medium	Big
Growth time	Four to six months	Three to four months	One and half months
Price	High	Medium/High	Low
Suppliers	Smallholder farmers	Companies/ Commercial farms	Companies/ Commercial farms
Weather tolerance	Good	Medium	Poor
Market demand	High	Medium	Medium

Source: People In Need (2015)

Figure 2: Local breed chickens



Source: Bio Logic Cambodia (2017)

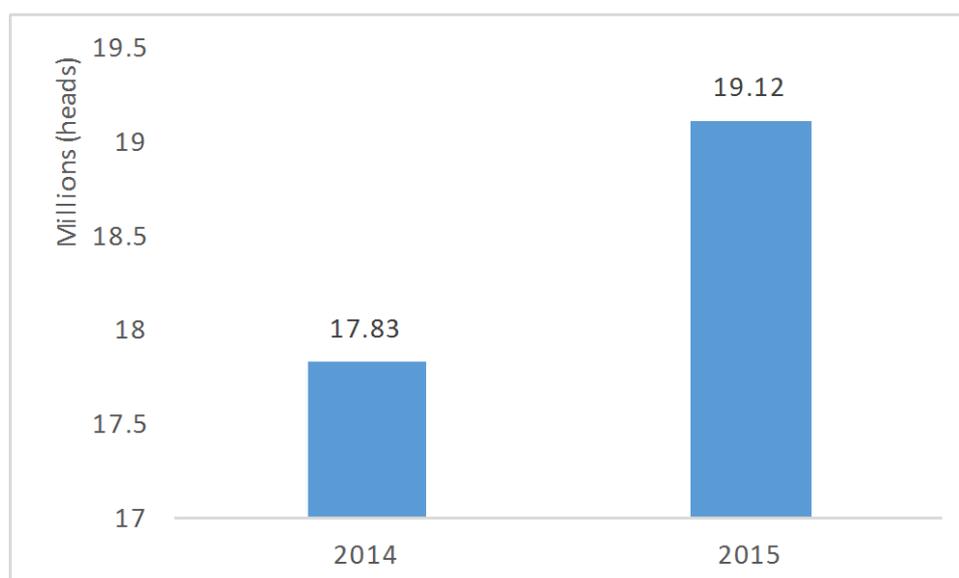
Figure 3: Part hybrid breeds (Moan Bei Sah chickens) Figure 4: Full hybrid (Broilers)



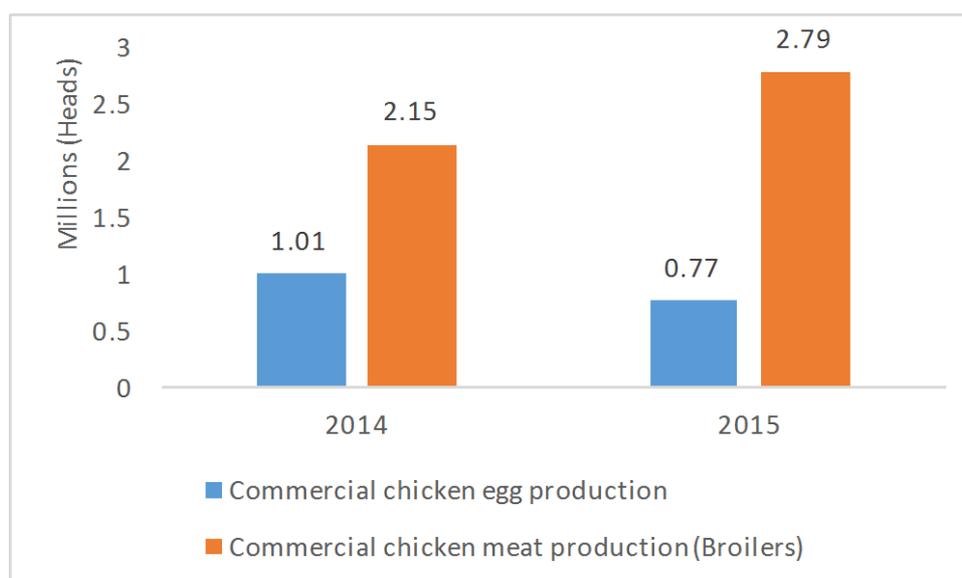
Source: (People In Need 2015)



Source: (Feed and Livestock 2017)

Figure 5: Local chicken production in 2014 and 2015

Source: MAFF (2015)

Figure 6: Commercial chicken egg and meat production in 2014 and 2015

Source: MAFF (2015)

In 2013, the national poultry demand (mostly chickens) was approximately 40 million head; however, the local supply capacity was only 27 million head (People In Need, 2015). To satisfy this high demand, Cambodia needs to import chicken meat from other countries, in particular from neighbouring Thailand and Vietnam. In 2015, Cambodia imported 1,123 tons of broiler meat (254 tons of whole chicken meat and 869 tons of boneless breast) and 1,451,750 live birds (MAFF, 2015, p. 30).

Avian influenza or “bird flu” occurred in Cambodia in 2004 and was identified at a commercial broiler farm, caused by the H5N1 virus. 18,000 birds died from infection, and another 9,518 head were killed to contain the outbreak. Humans were also affected by the disease (Khieu, Pok & Thieme, 2009). According to the report, six people died from this zoonotic disease. The disease led

to a drop in chicken demand and strict movement control of poultry. For instance, in 2004 the sales of poultry in Cambodia sharply decreased, by 50 per cent, and the poultry industry took three years to recover (Hall, Benigno & Kalpravidh, 2006). As a consequence, all chicken producers had significant losses of revenue.

Mapping the Value Chain Actors

Actors in the local chicken value chain

The value chain of local chickens is straightforward because these are produced for local consumption only. There is no export activity of local chickens and thus not many actors in the chain. The main important actors are input suppliers, smallholder producers, village collectors, wholesalers, retailers and consumers (Figure 7).

Input suppliers: Input suppliers are present in districts and provinces, and supply different kinds of chicken-related products such as feed, medicine, vaccine and chicken housing materials to smallholder producers. In some areas, input suppliers are primarily Village Animal Health Workers (VAHWs) who also provide medical treatments and technical advice for chicken raising.

Smallholder producers: Smallholder producers raise and roam their chickens in their backyards, and rely heavily on cocks and laying hens to produce chicks and continue their chicken production cycle. Traditionally, chickens are free ranged and mostly fed with a mixed feeding recipe such as household scraps, dried or fermented rice, and vegetable waste. These producers raise chicken only for home consumption and generating additional income. According to People In Need (2015), some 80 per cent of smallholders' chickens are sold to village collectors, while the surplus is sold to neighbours or directly to the local market. The sales of chickens between smallholder producers and village collectors usually take place at producers' homes.

Village collectors: The main role of village collectors is to buy chickens from producers and then sell these either to provincial retailers or wholesalers. The village collectors are based at a commune or district level and travel from one village to another, mainly by motorbike, to purchase chickens. Village collectors receive a commission in the supply chain of local chickens.

Wholesalers: Wholesalers are located at district or provincial markets. They purchase chickens from village collectors. Provincial wholesalers supply chickens to retailers in provinces and wholesalers in the capital city, Phnom Penh.

Wholesalers in Phnom Penh supply chickens through their distribution channels primarily to retailers at open markets and supermarkets. They also supply chickens to restaurants as well as roasted and grilled chicken sellers.

Retailers: Retailers buy chickens from wholesalers and then sell either live chickens or dressed chickens to consumers. Sometimes retailers also sell chickens to restaurants, along with roasted and grilled chicken sellers. According to Khieu, Pok and Thieme (2009, p. 5), 90 per cent of the retailers slaughter chickens by themselves, whereas the other 10 per cent of retailers hire other people to slaughter chickens instead. There are only a few supermarkets in Phnom Penh which sell chicken meat. In addition, approximately 64 per cent of chicken retailers in Cambodia are granted a license from the local authority.

Consumers: Local consumers are individual households. Despite the prices of local chicken meat being far more expensive than broiler and partly-hybrid chicken meat, many buyers still prefer to

buy local chicken meat because they believe that local chickens are free range. Furthermore, taste is also another important factor. Therefore, local chicken meat is commonly consumed by Cambodian people and it is normally used in many types of Khmer cuisines. Many buyers prefer to buy dressed chickens at open markets due to the fact that the price of local chickens at open markets is much lower than in supermarkets.

Service providers

Ministry of Agriculture, Forestry, and Fisheries (MAFF): The MAFF, a governmental institution at a national level, has a primary role in developing and implementing strategic planning, rules and regulations, and agricultural policies at national level. The MAFF supports agricultural production including animal husbandry and has a managerial role in monitoring and evaluating all agricultural activities at the provincial level.

Department of Animal Health and Production (DAHP): The DAHP is a governmental institution that specializes in animal production and health management. Under the supervision of the MAFF, the DAHP has roles in developing and implementing plans and policies for sustainable development of animal production and health. The DAHP also has roles to implement the sanitation control of animals and monitoring the risk of animal welfare and health, the negative effects of animal production on the environment and the risks to human health associated with animals (DAHP, 2015).

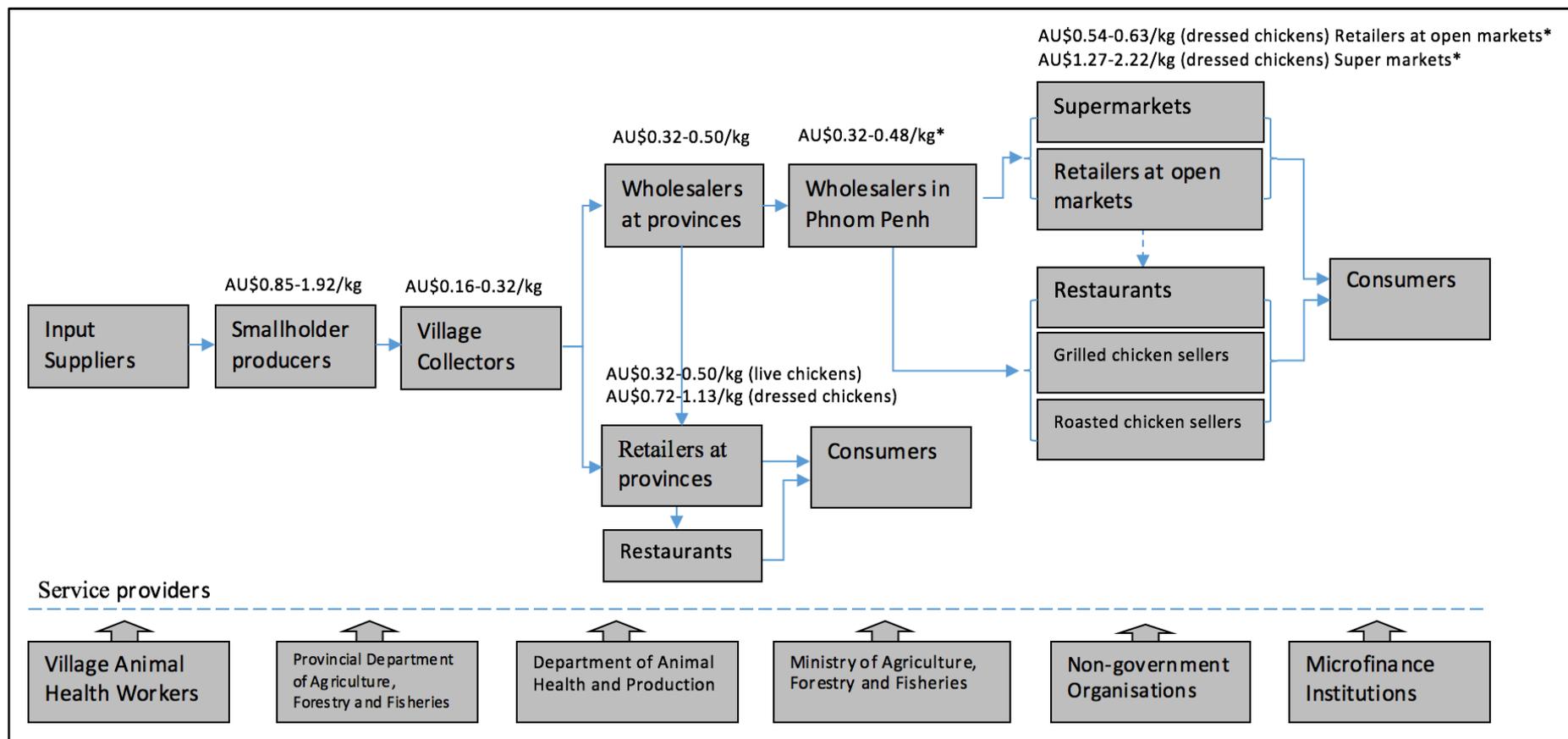
Provincial Department of Agriculture, Forestry, and Fisheries (PDAFF): The PDAFF are governmental departments at the provincial level. Under the management of the MAFF, the PDAFF provides technical agricultural training, support and extension services to producers and assists communities in forming farmer cooperatives. The PDAFF has daily interaction with producer groups in provinces.

Village animal health workers (VAHWs): VAHWs are animal health service providers at the village level. Though they are technically supported by the PDAFF, they work as private agents in the village for making money to support their family. The Cambodian government has committed to establishing VAHW services in every village; however, this goal has not been successful yet due to the fact that some VAHWs do not value this job so much and tend to migrate or find another better job. In 2015, there were 12,221 VAHWs (11,279 males and 942 females) established and supported by the MAFF; however, this number is still far below the total number of villages in Cambodia: 14,105 villages (MAFF, 2015).

In some villages, VAHWs both provide advice on animal health services and also sell vaccines and other animal medicine. Despite available services of animal production and health from VAHWs, the quality and services of VAHWs has not been trusted by animal producers due to their limited capacity and equipment. According to People in Need (2013), in 2013, 98 per cent of interviewed VAHWs (63 VAHWs in total) reported that they have limited technical knowledge and skills to recognise diseases and provide treatment. As a result, many chickens die in spite of having treatment from VAHWs.

Non-Governmental Organisations (NGOs): NGOs are non-profit organisations who work collaboratively with governmental institutions, private institutions and communities. Many active international organisations are involved in supporting animal production and value chain activities such as Heifer International, Netherland Development Organisation (SNV), People In Need (PIN), Oxfam, and the German Corporation for International Cooperation (GIZ). Local organisations, namely the Cambodian Centre for Study and Development in Agriculture (CEDAC) and the Cambodian

Figure 7: Mapping by profit margins of each actor along value chain



* The calculation based a report from a wholesaler in Phnom Penh

Source: Adapted from People In Need (2015)

Institute for Research and Rural Development (CIRD), are also involved in assisting farmers with animal production and linking farmers to markets.

Microfinance Institutions (MFIs): MFIs are private financial institutions that provide credit to many customers including input suppliers, producers, collectors, and sellers. In Cambodia, MFIs operate in every province. Most MFIs offer small and medium loans with interest rates. However, the interest rates which are provided by MFIs are still very high, and most of the producers who borrow loans from MFIs have difficulty paying the money back.

Value Chain Drivers

Logical drivers

Facility location has a long-term effect on the performance of a supply chain, and has implications for total production and transportation costs. If the facility is located near the source of supplies, production costs will be low and vice versa (Chopra & Meindl, 2013). In Cambodia, the production costs of smallholder producers, as well as operation costs of collectors, are high owing to the small-scale production, the distance between input suppliers and producers and the lack of nearby facilities of collectors. Producers may have to travel long distances from their villages to a district or a provincial centre to purchase inputs. Collectors may also have to travel from household to household to collect chickens because there are no available facilities located near producers. Therefore, facility location significantly affects total production and travel costs.

Local chicken production in Cambodia has not yet achieved peak production efficiency. Local chicken-raising practices in Cambodia still follow traditional methods and chickens are raised in backyards. Most producers raise chickens for home consumption and sell their chickens once there is a surplus. These practices do not assist producers to increase economies of scale, and producers face a challenge of high average production costs.

Vertical cooperation in a supply chain has not yet been implemented amongst local chicken producers. There is no formal contract arrangement between producers and inputs suppliers, and between producers and village collectors. The lack of cooperation and contract agreements in the vertical integration is responsible for high production costs because producers do not have the market power to bargain over prices from input suppliers. The individual producers may need to buy only a small amount of high-cost inputs at district markets or provincial markets.

Transportation is still a primary concern for actors in the value chain. In rural areas of Cambodia, infrastructure remains in a poor condition resulting from wars in previous decades and a lack of financial support in infrastructure development (Kean, 2012). Travel occurs on paved roads and the traveling costs in Cambodia are expensive. Due to this constraint, transportation means such as motorbikes are commonly used by village collectors to carry chickens. High fuel costs can be responsible for high transportation costs. For instance, the gasoline price per litre on 2 October 2017 in Cambodia was AU\$1.29 which was higher than that of other countries in the same region such as Vietnam, at AU\$1.08/litre. As a general rule, the price of gasoline in the least developed countries (such as Cambodia) should be lower than that of developing and developed countries (Global Petrol Prices, 2017).

To reduce transportation costs, most wholesalers in provinces supplying chickens to Phnom Penh usually transport chickens in the back of a minibus or pick-up truck, without using a proper cage. The number of chickens for transportation per occasion is between 1,000 to 2,000 chickens (AsiaDHRRA, 2008, p. 12).

Cross-functional drivers

Product flow:

As illustrated in Figure 7, local free-range chickens are raised by smallholder producers in their households. Village collectors are based in a commune or district and collect and purchase chickens from producers' households. Normally, village collectors will come to purchase chickens when producers have at least 11 to 14 Kg of chickens (People In Need, 2015). As reported by AsiaDHRR (2008), live chickens are usually transported by village collectors through the use of a motorbike. Then, village collectors supply chickens for wholesalers who are known for distributing chickens in provinces. Wholesalers' transport means include minibuses, pickup trucks or motorbikes. The current logistical arrangements for carrying live chickens are unethical and unprofessional, owing to the fact that a cage is sometimes not used to store chickens. As a result, chickens are stressed, resulting in low-quality meat. In addition, to gain more weight, wholesalers sometimes inject water into live chickens and provide chickens with excessive amounts of animal feed. Wholesalers distribute chicken to retailers at open markets, supermarkets, restaurants, and grilled and roasted chicken sellers.

Information flow:

Information sharing between actors in the value chain is potentially beneficial for all actors. This information flow should be both backwards and forwards. For instance, the information between producers and collectors relates to the demand and availability of chickens (Berg et al., 2008).

In the local chicken value chain, both producers and village collectors interact with each other. Village collectors inform producers about the required amount of chickens, and then producers notify village collectors about the available amount of chickens that they are able to sell. Both parties arrange a collection date and agree the purchase price of chickens. Similarly, there is a connection between village collectors, wholesalers located in provinces and Phnom Penh, and retailers. Based on their experience in supplying chickens, wholesalers estimate the demand for chickens and then order from village collectors. However, the demand for chickens fluctuates seasonally. For example, the need for local chickens will increase considerably during the special national festivals in February, April, August, and September (People In Need, 2015).

Financial flow:

Financial flow starts from producers and ends with end consumers. Individual producers purchase inputs such as animal feed, medicine, and other chicken house equipment from input suppliers at retail prices. Next, village collectors purchase live chickens from producers. The price of live chickens fluctuates depending on season and the quality of chickens, ranging from AU\$4.11 to AU\$5.38 per kg. For instance, chicken prices will reach a peak during the Khmer New Year in April due to high demand. There is a lack of access to market information amongst producers, so village collectors frequently obtain produce below the daily market price. The profit margin which producers receive from selling their chickens per kg is from AU\$0.85 to AU\$1.92. Retailers, either at open markets or supermarkets, receive a higher profit margin compared to village collectors and wholesalers (Table 2) (People In Need, 2015, p. 16).

Constraints and Challenges for Local Chicken Producers

Local chicken smallholder producers face many challenges in the value chain. Firstly, smallholder producers do not have the market power to bargain over input prices. Each producer purchases a few inputs at retail prices, resulting in higher costs. In addition, because most of the input suppliers are located in a district or provincial centre, each producer needs to travel long distances to buy

inputs. Therefore, they pay high traveling costs. Market information is another big challenge amongst chicken

Table 2: Average profit margin of each actor in chicken value chain

Smallholder producers	Village collectors	Wholesalers at provinces	Retailers	Wholesalers at Phnom Penh	Retailers at open markets	Retailers at super markets
AU\$0.85-1.92/Kg	AU\$0.16-0.32/Kg	AU\$0.32-0.50/Kg	Live chickens AU\$0.32-0.50/Kg Dressed chickens AU\$0.72-1.13/Kg	AU\$0.32-0.48/kg	AU\$0.54-0.63/Kg	AU\$1.27-2.22/Kg

Source: People In Need (2015)

producers. Most small producers lack access to market information such as chicken prices. Generally, village collectors always offer producers a chicken price below the market price. Although local chicken meat has higher prices than broilers and partly-hybrid chickens in markets, as shown in Table 1 above, the duration of growing local chickens is much longer than that of full-hybrid and partly-hybrid chickens. As a consequence, producers need to spend a lot of money on chicken feed and it takes longer for producers to get the profit from raising local chickens. Smallholder producers still apply traditional methods of raising local free-range chickens and receive less agricultural technical support from the Provincial Department of Agriculture. A study conducted by People In Need (2015) reveals that chicken producers have not received enough support from the district and provincial governmental extension services. Most of the agricultural services that small producers have received are from VAHWs and NGOs. There is increasing concern that chicken diseases are a severe problem for many small producers, resulting in lost profit and capital. A 2013 agriculture census conducted by the National Institute of Statistics (2015) found that 22 per cent of chickens, accounting for 5, 562,985 birds, died from diseases. A final issue is food safety. Avian influenza in 2004 in Cambodia caused severe impacts on local chicken production. The demand for local chickens decreased significantly during the outbreak of the disease due to consumers' fear of the disease.

Potential Intervention and Support

Formation of cooperatives

One way to deal with the constraints of smallholder producers is to work together as a cooperative. A cooperative is jointly formed by individual producers who work together for the same purpose, to achieve the same goal. Producers could form a cooperative specialising in chicken production. Having a clear production plan for chicken raising from each member could assist the cooperative committee to estimate the number of chickens that their members could produce, and could

maintain chicken supply to village collectors. Working cooperatively is an effective approach to strengthening the power of individual members.

There are multiple benefits to forming a cooperative for all members. Firstly, a cooperative could decrease production costs and gain purchasing power (buying power) amongst less powerful smallholder producers. According to Porter & Advantage (1985), purchasing power of buyers influences the input prices that suppliers claim from buyers. The agricultural cooperative could assist members to purchase inputs at lower costs and help smallholder producers achieve economies of scale (University of California, 2012). Within an agricultural cooperative, an individual chicken producer could coordinate with others and agree to purchase inputs, for instance animal feed, in large quantities.

Secondly, a cooperative has the power to negotiate chicken prices with village collectors. Each member could agree to sell chickens at the same price. As a consequence, village collectors could not obtain different prices from each producer and would need to negotiate the prices with the cooperative.

Finally, a cooperative could also assist producers to find potential buyers. A cooperative committee could conduct a market assessment and identify likely potential and reliable buyers that could obtain better prices. The contract agreement can be arranged between the cooperative and the buyers. Therefore, the cooperative could help smallholder producers to gain purchasing and negotiating power, achieve economies of scale, and assure supplies and market demand.

Public and private intervention

The support activities and services that public and private institutions could provide to improve the value chain are: rules and regulations; improving public infrastructure from government support; access to finance with a reasonable interest rate from microfinances; and producer group strengthening supported by NGOs. For example, according to Chopra & Meindl (2013) good infrastructure is a key element to lower production costs of producers. It is believed that once the value chain performs well, producers will realise the benefits and their constraints can be addressed efficiently.

Improving technical support services from the Cambodian Government relating to chicken growing techniques, making chicken feed, and hygiene are keys to enhance small-scale chicken production and avoid the outbreak of diseases. People In Need (2015) reports that there is limited support from the Government and the support services have not fully reached producers yet. Most of the agricultural support that small producers receive is from NGOs who are working with smallholder producers; however, these NGOs cannot cover all target areas. Therefore, if the government services could increase extension services (*i.e.* agricultural training and advice) to reach producers, local chicken production will be improved.

Development of new certifications

Developing local free-range chicken certifications could potentially strengthen the local chicken industry and assist smallholder producers. The Cambodian government, with support from the private sector, should establish guidelines and certifications for local free-range chickens. Accreditation of approval for the certification of local chickens has not yet been developed in Cambodia, and it may take time to prepare. Currently, the Cambodian Organic Agriculture Association (COAA) only provides chemical-free certifications for agricultural and organic products, and only for vegetables and rice. The COAA has strong support from the Ministry of Commerce

(MoC) and the MAFF. It is composed of nine members including farmer cooperatives, agricultural companies and NGOs, who are actively working in the agricultural sector (Cambodian Organic Agriculture Association, 2017). Smallholder chicken producers will benefit from the development and implementation of certification for local free-range chickens. Firstly, many local consumers prefer local chickens, so they might purchase chickens for a higher price if there is a label of certification that also indicates the supplier source. Secondly, producers could maintain the prices of local chickens by having a standard certificate. If there are established certifications, village collectors would not be able to offer lower prices than the market price. Finally, local chicken meat will be able to compete with other types of commercial chickens, such as broiler and partly hybrid chicken meat, in the market. Therefore, a local free-range chicken certification is a way to prove quality and animal welfare. Producers will receive many benefits in terms of price, market demand, market competitiveness and trust. Consumers will also get the benefits of quality assurance and reliable sources of supply.

Improving access to market information

Access to market information is another area which could help producers to achieve better prices. Smallholder producers should have a contact list of village collectors and wholesalers. They can check the prices of chicken in markets and the prices offered by village collectors. The lack of market information can be addressed by bringing each actor, producer representative and buyer to have a consultative discussion in a workshop with support from governments and NGOs who are actively involved in the value chain (AsiaDHRRA, 2008; Kelly, Vergara & Bammann, 2015).

Implementation of interventions

According to “Making Value Chains Work Better for the Poor (M4P)”, the above potential interventions could be effectively implemented through analysing and improving governance and services. Governance describes the rules and regulations that operate in and coordinate value chain (Berg et al., 2008). For instance, if quality standards are strengthened they will have positive effects on the whole value chain (Berg et al., 2008). In addition, value chain actors may be lacking support and access to services. As illustrated by a ValueLinks manual, value chain services can be financial and business services (Springer-Heinze, 2008). Sufficient support services could potentially assist actors to be actively involved in the value chain (Berg et al. 2008). Therefore, governance and services could remove the barriers to actors in particular smallholder production circumstances. Following this, once the governance and services of all actors in the value chain are improved, actors will have better access to services and resources.

Conclusion

The local chicken industry plays a vital role in improving the income of smallholder producers in rural areas. This is because the majority of farmers are actively involved in local chicken raising for the poultry industry. The most effective method for improving local chicken value chains is to address the issues faced by smallholder producers. The main issues are the lack of market power and market information, the reliance on traditional growing methods, the control of diseases, and food safety. If these problems are solved, all actors in the local chicken value chain will benefit. The supply of local chickens will be increased and local chicken meat will be able to compete in larger poultry markets. More importantly, Cambodia’s need to import chicken meat from other countries will decrease, resulting in improvements for the country’s social economy.

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