



Report of a market study
in Mai Son district,
Son La province



RESEARCH
PROGRAM ON
Livestock

Report of a market study in Mai Son district, Son La province

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Executive summary

The report provides insights into the value chains of two livestock species, buffalo/beef cattle and pigs, in three communes that represent the three farming systems—intensive (type A), mixed crop–livestock (type B), and extensive (type C)—in the Northwest Highlands of Vietnam. It aims to provide the evidence base for suggesting opportunities for improving interactions and structures within value chains for standard and specialized products.

Key findings from the report:

- Local pigs are raised in all three village types while crossbred pigs are successfully raised in type A village only. In all villages, pig production is a small-scale operation with less than pigs/household per year. Approximately 50% of local pigs produced in type A and B villages are for sale, given the high market demand and better road access. In contrast, almost 100% of local pigs in type C village are for home consumption, mainly due to the remoteness and inaccessibility of this highland village, especially in the rainy season.
- Due to small-scale production and poor road condition to villages, village collectors are likely the primary actors that producers can access to sell their pigs. Only few producers in type A village sell pigs directly to other downstream actors such as traders, slaughtering units or processors with better price offer. Consequently, a significant number of village collectors exist who play an important role as gatekeepers of market information. This fact might lower the bargaining power of farmers and therefore offer them little incentive to increase the production scale.
- Most producers in all three villages raise cattle of local breed for multiple uses including ploughing, marketing and family and social events. A few producers in type A village had raised crossbred cattle in the past but then stopped this business because the Laisind (crossbred) cattle were offered lower prices than the local breed.
- The cattle value chain is also characterized by small-scale production and loose linkages among actors. While village collectors play an important role in type A and B villages, outside collectors or abattoirs are more active in type C village. This marketing channel could be explained by the larger scale of cattle production and perceived higher quality of beef cattle raised by the free-ranging technique of the H'mong people located in type C village. In all cases, producers are still price-takers due to limited market information and low bargaining power.
- For both pig and cattle value chains, collective action would be an option to allow smallholders to access lucrative markets and also to improve their bargaining power when selling animals. Forming a group of producers to increase the number of animals marketed each time is a potential intervention to link them directly to a certain number of “preferred” collectors/ traders or slaughtering units, especially the slaughtering units at Hat Lot town.
- For the cattle value chain, supporting producer groups in developing and marketing specialized high-value products (e.g. dried beef) is also seen as an efficient intervention to improve the livelihoods of producers and other actors involved. Currently, the local authority in Mai Son district is supporting A Mon cooperative to develop a brand for dried beef/buffalo meat under a national program called “One Community One Product” (OCOP). External support is needed to help the cooperative meet the requirements of evidence of input ingredients, packaging and labels, origin traceability, etc. Although this cooperative is not located in the study sites, it has market linkages with some collectors in these sites. Thus, supporting the cooperative to get the OCOP brand will indirectly benefit the project beneficiaries.

1 Introduction

The CGIAR Research Program on Livestock (Livestock CRP) is in its second year with a focus on interventions. The Livestock Livelihoods and Agri-food Systems (LLAFS) flagship interventions in particular aim at (i) improving linkages between lowland, midland and highland farmers, traders and processors to improve the efficiency of livestock value chains, providing incentives to producers for investing in more profitable and sustainable production of high-quality animals, and (ii) building up branded products and creating sustainable linkages between traders, processors and their customers in target markets (within or outside the province).

The design of these interventions will rely on a good understanding of the current situation and opportunities for improving marketing of livestock and livestock products in the study sites. Thus, a market study was designed with the following specific objectives:

- To understand current market structures and interactions in the value chains of targeted livestock species (buffalo, beef cattle, local and crossbred pigs)
- To determine additional market opportunities for specialized products (e.g. naturally raised pigs of indigenous breeds, dried beef/buffalo meat), and
- To determine opportunities for improving interactions and structures within value chains for standard and specialized products.

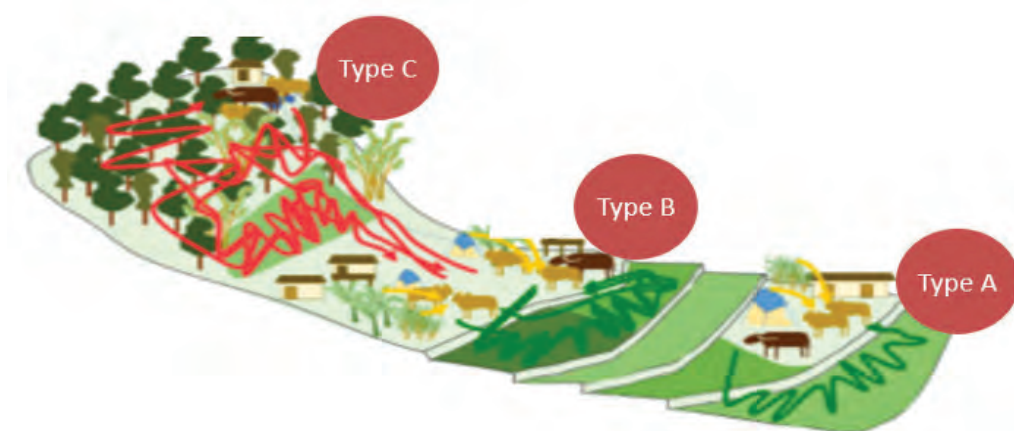
The study was conducted in two treatment communes of the project (Chieng Luong and Chieng Chung) from 16–25 September 2020.

2 Methodology

2.1 Study sites

The interventions for the project will be targeted at three types of farming systems characterized by different challenges and needs. These farming system categories, which the project team developed based on partners and literature information and later validated during field visits, represent a common understanding of the situation in the Northwest Highlands of Vietnam. The farming types are: A—good access to markets with more intensive crop production, generally located in valleys; B—medium-level market access and production intensity in the mid-altitudes, with mainly Thai ethnic minorities; and C—limited access to markets due to remote location at higher altitudes, with extensive production, and mainly H'Mong ethnic minorities (Figure 1).

Figure 1. Main farm typologies in Northwest Highlands of Vietnam



Source: Blanchard et al. (unpublished)¹

Based on this classification, the study selected three villages from the project intervention villages that represent the three farm categories: Mon village in Chieng Luong commune (type A), Oi village in Chieng Luong commune (type B), and Xam Ta village in Chieng Chung commune (type C). Table 1 summarizes the characteristics of these three villages.

¹ Presentation by M. Blanchard et al. unpublished. Trade-off and synergies of integrating intensive livestock production with agro-ecology in mountainous regions. Agro-ecology Futures Regional Forum, Siem Reap (Cambodia) 6–8 November 2018.

Table 1. Characteristics of three study villages

Indicator	Mon village (type A)	Oi village (type B)	Xam Ta village (type C)
Altitude (highest point in the village) (m)	970	1000	1700
Ethnicity	Thai (100%)	Thai (100%)	H'Mong (100%)
No. of households	308	120	20
Poverty rate (%)	5	9	84
Main crops	Rice, sugarcane, maize	Rice, sugarcane, cassava, longan, plum	Rice, cassava, Son Tra (H'Mong apple), peach
Main livestock species	Buffalo, cattle, pigs (crossbred and local)	Buffalo, cattle, local pig, goats	Cattle, local pig

2.2 Data collection and analysis

Various actors engaged in the target value chains were selected as respondents for data collection. In this study, we focus only on the output value chains from the farmer/producer onwards. We considered producers, local collectors, short- and long-distance traders, brokers, wholesalers, processors, retailers and consumers in target markets. Data were collected using focus group discussions and key informant interviews. Detailed discussion guidelines are included in Appendix 1 and 2.

Focus group discussions

Focus group discussions (FGDs) were conducted with producers in the three villages. These groups were divided by livestock type and participant gender. According to this design, the study included 12 FGDs: three villages two gender groups 2 livestock types (large ruminant, i.e. cattle/buffalo and local/crossbred pigs). However, due to harsh weather (i.e. heavy rain for many days) it was extremely difficult to approach Xam Ta village, and farmers were invited to the neighbouring Nam village in the lowland, which has better access to roads. Unfortunately, only men were able to ride their motorbikes out of the village, so only two FGDs with male producers were held with Xam Ta villagers. Some women who came with these men could not constitute an individual FGD because they did not speak Vietnamese (Kinh) fluently. These women joined the FGD of pig farmers, and male participants were asked to interpret. Accordingly, the study conducted 10 FGDs (Table 2).

Table 2. Characteristics of FGD participants

	No. of participants	Participant age (mean years)	Buffalo/hh (mean #)	Cattle/hh (mean #)	Pigs/hh (mean #)
Mon village (Type A)	36	34.9	1.7	1.4	5.9
Large ruminant (female group)	10	30.7	1.6	2.2	–
Large ruminant (male group)	8	40.4	1.8	0.4	–
Pig (female group)	11	30.8	–	–	4.4
Pig (male group)	7	41.1	–	–	8.3
Oi village (type B)	38	35.5	1.2	1.7	4.9
Cattle (female group)	9	33.8	1.2	1.9	–
Cattle (male group)	9	33.9	1.1	1.4	–
Pig (female group)	12	35.3	–	–	5.1
Pig (male group)	8	39.4	–	–	4.5
Xam Ta village (type C)	22	31.5	0.0	5.5	3.7
Cattle (male group)	11	31.6	0.0	5.5	–
Pig (male group)	11	31.3	–	–	3.7
Total	96	34.3	1.1	2.5	5.0

– No information or not applicable: Source: FGD data (2020)

Participants were raising either buffalo/cattle or pigs, or both, at different scales (small, medium or large herds) and were actively engaged in livestock marketing. In addition, exclusion criteria were formulated to characterize households that should not be invited to the FGDs:

- Households with very old/young/poor/rich heads—these households often have limited insights into the whole village or have a very peculiar perspective.
- Households with household heads staying away from their village for long periods (migrant labour).
- Administrative/party officials or extension staff—they might be tempted to present the ideal rather than the actual situation.
- Households also acting as collectors, i.e. buying livestock for trade.

The selected FGD participants represented the diversity found within the village and also the whole village situation. A mix of participants was achieved along the following characteristics:

- Livestock herd size (small, medium, large)
- Crop cultivation (depending on the context, different major crops)
- Market access (some participants from villages with good, some with poor market access).

Based on these criteria, the team worked closely with heads of the three villages to select appropriate participants before the survey.

Each FGD was limited to 6–8 participants, to allow for efficient discussions. However, in the field more farmers were often invited by the village heads to the meetings. Excluding some would have been considered rude in their culture, so we sometimes accepted 11–12 participants in an FGD. Fortunately, facilitators had sufficient skills and experience to manage such groups.

All FGDs were carried out at local meeting places such as the commune’s community development centres and the village’s cultural houses. FGD discussions were recorded. Participants are listed in Appendix 2.

Key informant interviews

Information collected during the FGDs allowed the team to identify the actors at the next value chain nodes for key informant interviews (KIIs) including collectors, butchers, processors, wholesalers, retailers, etc. We also interviewed key informants working in supporting sectors, such as extension workers, veterinary staff, cooperative members. Many of these respondents were located outside the three selected villages, so the team sought help from the local authorities at different levels (village, commune, district, province) to contact these actors and engage them in KIIs. In total, 25 KIIs were conducted (Table 3). KIIs were conducted at the informants’ houses or their workplaces. The KII checklist is attached as Appendix 3 and the list of KII participants as Appendix 4.

Table 3. Number of key informant interviews and actors

KII	Chieng Luong	Chieng Chung	Co Noi/Hat Lot / other	All
Collector	5	2	–	7
Butcher	–	1	5	6
Retailer	2	3	2	7
Processor	–	–	1	1
Extension worker	1	–	–	1
Veterinary worker	1	–	–	1
Cooperative director	–	–	1	1
Cooperative member	–	–	1	1
Total	9	6	10	25

Sources: KII data (2020)

Data analysis

Data collected were analyzed using summary statistics, contrasting the value chains for the various products under investigation and considering the study sites in the different farm typologies (A, B, C).

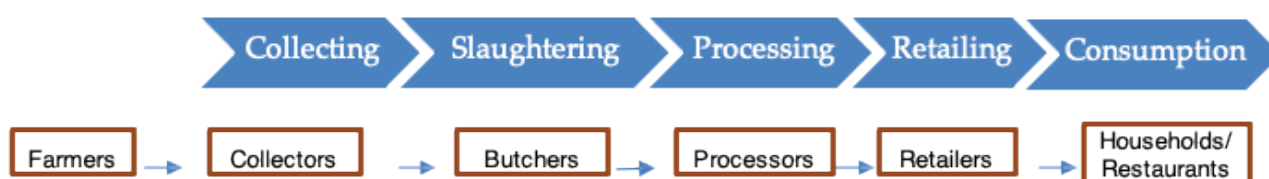
3 Key results and discussions

3.1 Pig value chain

Value chain actors and their roles

Figure 2 shows the generic pork value chain in Mai Son district. The study found five types of actors: producers, collectors, butchers, processors, and retailers.

Figure 2. Generic pork value chain in Mai Son district



Farmers

In the three selected villages, pigs were generally raised on a small scale by smallholders. Male and female participants in our focus groups confirmed that most farmers kept less than five pigs at a time (Table 4) and the distinction between large–medium–small scales was not clear. In addition, it seemed that farmers in the lowland kept slightly more pigs than those in the higher village.

Crossbred pig farming was observed only in the lowland village. Perhaps lowland farmers have advantages in gaining access to markets and information (or production techniques), presenting them with an opportunity to adopt crossbred pig production. Farmers in the higher villages mentioned that they had heard about crossbred pigs and wished to try them, but they did not know where to buy good breeds and how to raise them. Farmers also said they preferred the taste of the meat from local breeds (Ban pig) compared with that of crossbred pigs.

Table 4. Characteristics of pig farmers in focus groups

Pig farmers	No. of FGD participants	Participant age (years)		No. of pigs/household	
		Mean	SD	Mean	SD
Village type					
A – Lowland	18	34.8	13.4	5.9	4.9
B – Midland	20	37.0	8.5	4.9	3.6
C – Highland	11	31.3	12.4	3.7	2.3
Total	49	34.9	11.4	5.0	4.9
Gender					
Female	24	31.6	10.1	4.7	3.1
Male	25	38.0	11.8	5.3	4.6
Total	49	34.9	11.4	5.0	3.9

Source: FGD data (2020)

Key difficulties of local farmers in producing pigs were breeding techniques, capital and disease management. Most farmers followed the traditional practice of allowing their pigs to roam freely to forage for feed, which allows for natural breeding but without any control of mating. They observed the degradation of quality in their local pigs, but they did not know how to change the situation. To shift from free range to controlled farming, such as with feedlots or stalls, they would need to invest in shelters and feed, which would require capital that they did not have. In addition, local farmers stressed they had little knowledge of and skills for managing diseases affecting pigs. They did not know how to treat sick pigs properly.

The number of pig farmers has increased in recent years as have herd sizes. And most farmers had a positive view on the development of pig production and marketing over the next five years.

Other actors from KII

The study identified both male and female intermediate actors in the pig value chain. Of the 12 people interviewed, six were female and six male (Table 5). All collectors were male because they spend whole days in other communes and districts sourcing live pigs, an activity that requires time and good health. Females are more involved in retailing meat in markets or at the butchers. Ages of the actors range from 33–54 years. All actors operate as individual business households, except one processor who operates as a business entity (Ha Vu Dried Beef and Agricultural Product Production Unit). Measuring community socio-economic characteristics enables researchers in development practice to compare ex ante and ex post situations, the relevance of a development intervention to a community and predict the likelihood of success of the intervention. It is necessary to understand the gendered perceptions of the factors which determine wealth distribution. Community socio-economic stratification to measure vulnerabilities often requires the use of proxy or indirect indicators to approximate the phenomena being described, as phenomena such as vulnerability do not have a direct measure or sign. Examples of proxy indicators include health, governance, political rights, literacy and economic well-being. These proxy indicators have been used to develop a social vulnerability index for countries in Africa. In this study, we stratified the communities by wealth and household type, in terms of headship, wealth status and affliction by HIV/AIDS, and developed proxy indicators, with community members, for each stratification category.

Table 5. Characteristics of key informants in the pig value chain

Indicator	Collectors	Butchers	Retailers	Processors
No. of KIIs	2	3	6	1
Gender				
Male	2	1	2	1
Female	–	2	4	–
Age (years)	40–42	35–44	33–38	54
Ethnicity				
Kinh	1	2	4	1
Thai	1	1	2	–

Collectors

We found two types of collectors in the pig value chain: specialized vs part-time. The first type specializes in collecting pigs regularly and these actors consider it as their main economic activity. They can trade up to 28–30 live pigs/month. The second type considers the work as a side activity with low monthly trading volumes. One part-time collector interviewed said he often goes out once or twice a month to buy pigs, on average one to two pigs on each occasion.

Pig collectors primarily buy pigs from farmers regardless of ethnic group. They then sell live pigs to different buyers including farmers, butchers and consumers. Farmers buy live pigs for fattening or for reproducing, and also for

home consumption during special events. One specialized collector interviewed in Hat Lot town has a group of 4–5 consumers who often buy one pig at a time to slaughter for home consumption

Pig collectors do not have fixed business locations. They source pigs from their villages or other villages in the commune, or even from other communes in Mai Son district and other districts. They can travel more than 120 km from their village to look for supply sources. Motorbikes are the most common means of transport used by collectors because they buy only few animals at a time and because motorbikes can go further up to highland villages, especially during the rainy season. Some collectors travel in groups to distant places, especially when going to other districts.

Pig collectors prefer not to store live pigs at home for fear of infectious diseases. Also, it was reported that pigs from different places usually feel unfamiliar with new conditions (e.g. at collectors' places), so they eat less and lose weight. Grading and sorting of live pigs are generally not practiced because of limited trading volumes (1–2 pigs/event).

The number of pig collectors in the study sites has been increasing over the years while the average trading volume per collector is relatively stable. The area had only 4–5 collectors in the past five years, but the number has now increased to 8–9 collectors. This increase is driven by the comparative advantages of this work vis à vis crop farming. Over the years, land areas devoted to food crops have likely been decreasing or have been converted to other market crops such as fruit trees or sugar cane, which demand less labor. Besides, the seasonality and high workload of cropping have induced more people to seek other job opportunities with better working conditions and higher income. Pig collection in particular is perceived as much easier with better income opportunities.

Butchers (wholesalers or retailers)

The three butchers interviewed perform multiple functions including slaughtering pigs, wholesaling and/or retailing pork; only one butcher specializes in local or black pigs, the rest mainly slaughter crossbred or white pigs. For black pigs, the supply is primarily from farmers in Mai Son or neighboring districts (70–80%). For white pigs, the butchers prefer buying pigs from large farms due to guaranteed quality and larger volumes. Also, white pigs fed with by-products from the production of rice or maize spirits are preferred. The quantity of pigs bought by the butchers varies depending on the source and market demand for meat and ranges from 4–5 pigs/event.

Depending on market demand, butchers buy a certain number of live pigs and store them for slaughtering over the next couple of days. The number of pigs stored varies from one to two black pigs (for small butchers) and from five to six or even a whole litter of white pigs collected from a farm (for large butchers). The butchers do not grade, sort or process meat but prefer healthy pigs with large hams (apparently an indication of a high lean meat content). The common means of transport is also the motorbike.

Butchers sell meat at local markets in Hat Lot town or Co Noi. The main buyers are household consumers (for retail butchers), other retailers (for wholesale butchers), and processors.

The interviewed butchers had different observations on changes in trading volume and number of actors over the years. All butchers specializing in white pigs reported decreased trading volumes and fewer actors, while those specializing in black pigs affirmed a positive trend.

Retailers

Similar to collectors, retailers are of two types—specialized and part-time. The first type specializes in retailing pork and these actors consider this business as their main economic activity. These retailers are often located in more crowded areas (i.e. Co Noi market and Hat Lot market). The second type sells pork together with other local products (e.g. tofu, sometimes chicken meat and eggs) on a stall/wooden table by the street; the quantity of pork traded daily is small (1.0–1.5 kg/day).

Of the six retailers interviewed, two sold both local and crossbred pork, called big retailers in this context. They buy live pigs, hire butchers to slaughter the pigs and then sell pork at Hat Lot market in Mai Son town. These persons sell 1–2 pigs/day with live weights of up to 230 kg/head. Other retailers sell only crossbred pork and operate in the villages. They sell very low quantities per day (1–3 kg).

The two big retailers interviewed in this study buy five to six live pigs at once and store them for 3–4 days to slaughter in a couple of days. Meanwhile, small retailers in the village do not store meat. While the transport means is the motorbike for small retailers, big retailers prefer the cart (motorbike trailer).

The number of retailers has remained stable over the years, but because of Covid-19 they trade smaller volumes of pork and also operate less frequently than before.

Processors

We interviewed only one pork processor who operates one business entity: Ha Vu Dried Beef and Agricultural Product Production Unit. The main processed products are dried pork/beef/buffalo meat and pork loaf.

For pork products, this processing unit uses on average 100 kg fresh pork/day. This volume may triple during the Tet holiday. March to July record the lowest trading volumes. This unit has a contract with a slaughterhouse in Mai Son district to supply fresh pork daily. The shank cut of the hind legs of pigs is most preferred for producing high-quality processed products. These products are sold locally and in other provinces such as Hoa Binh and Ha Noi (including in more than 10 restaurants in Hanoi). At the time of interviewing, the unit was processing about 13 kg of fresh pork daily into dried pork and meat loaf, approximately a 90% drop in processing capacity compared with the period before the Covid-19 pandemic. Meat is dried using electricity rather than wood—the traditional way—, which was explained as “safer than using wood, because chemicals applied on wood might affect the quality and safety of product.”

This processing unit has had its own labelling for years, which helps it win consumers’ trust given increasing concerns about product quality (e.g. taste, flavor, food safety and origin of material for production). Due to the adverse impacts of Covid-19, not only has the business volume decreased but also the number of processors in the area. Currently the area has 10 processors.

Other actors from the public sector (vets, extension staff, etc.)

Veterinary staff. Lo Thi Thu is a veterinary service provider in Chieng Luong commune. Each village in the commune has one person responsible for veterinary work. Because of their very low or no salary at all, these village veterinary workers have few incentives to work. Initially, a training course was carried out for village veterinary workers but not all of them attended. Village veterinary workers mostly only handle vaccination supported by the government; they are weak in diagnosing and treating sick animals.

Village veterinary workers find it difficult to work with farmers who are not aware of vaccination. Very few farmers vaccinate their pigs.

Some of the issues veterinary workers contend with at Chieng Chung commune include:

- Weak capacity of village veterinary worker and lack of a network; few dedicated persons who can treat sick animals such as in the villages of Y Luong and Lui
- Low or no incentives, including salaries
- Lack of supplies (cool box for storing vaccine, medicine, equipment for injecting)
- Low awareness of farmers of the benefits of vaccinating and of disease control programs.

Thu also mentioned other constraints to pig production:

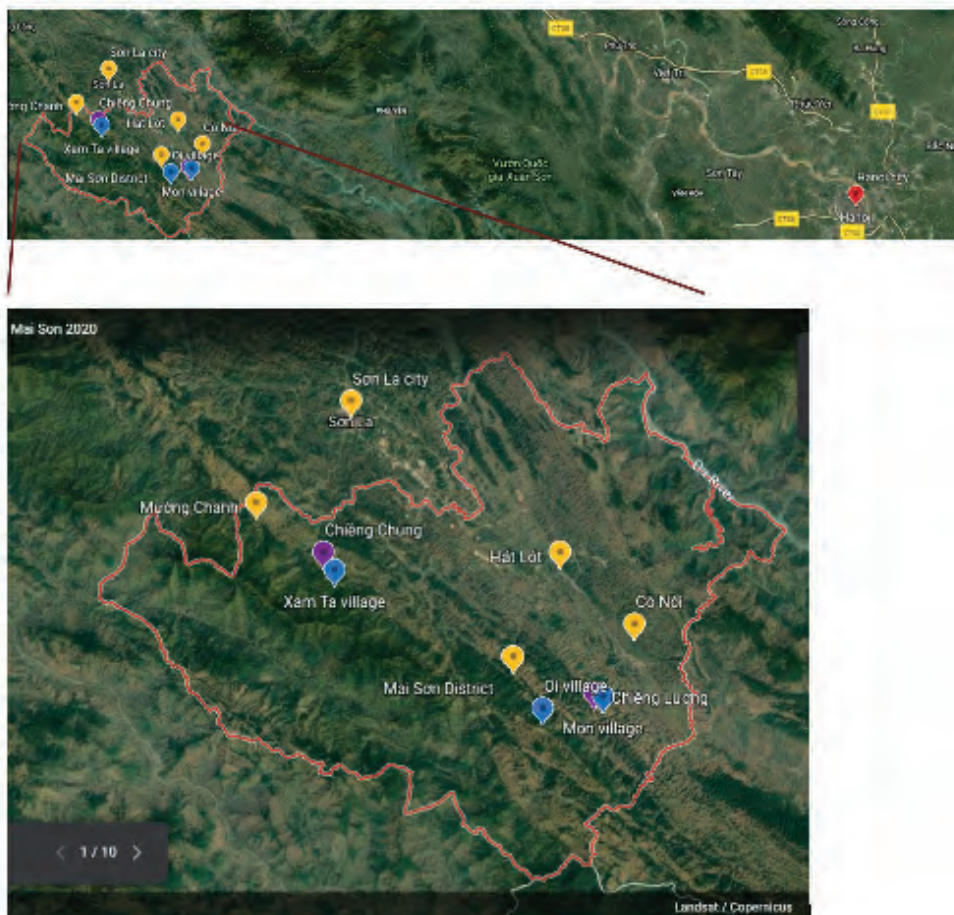
- Poor roads make it difficult for collectors to access villages and buy pigs
- Farmers don't have sufficient knowledge and skills in raising crossbred pigs; they also lack capital to expand production
- Low supply discourages collectors from traveling to the villages to buy animals
- Cattle and pig farmers in the commune have not been trained.

Extension staff. Cam Van Huoi, 54 years old, has been working as an extension worker in Chieng Luong commune for more than 20 years. He has had little work with pig production but is interested more in developing cattle production rather than pig production in the commune for the following reasons: (i) cattle do not suffer from disease as much as pigs, (ii) "if it (cattle) died, it could still be slaughtered and consumed, unlike pigs," he said, and (iii) farmers can sell or keep cattle as long as they want, unlike (white pigs).

Others. The director of cooperatives proposed expanding pig production to get higher volume so that farmers can contact butchers directly in Co Noi and Hat Lot markets and get better prices.

Location map of value chain actors

Figure 3. Geo-locations of interviewed actors in the pig value chain in Mai Son district (red boundary)



Source: Authors' identification of locations on Google Earth, 2020

Legend:

Blue – villages of Mon, Oi (Chieng Luong commune and Xam Ta Ta (Chieng Chung commune) where pig farmers were interviewed

Yellow – other places in Son La province where various middlemen were interviewed: collectors in the villages, slaughterhouses (cum other functions) in Hat Lot town and Co Noi commune; retailers and processor in Hat Lot

Purple – communes of Chieng Luong and Chieng Chung

Red – city of Hanoi

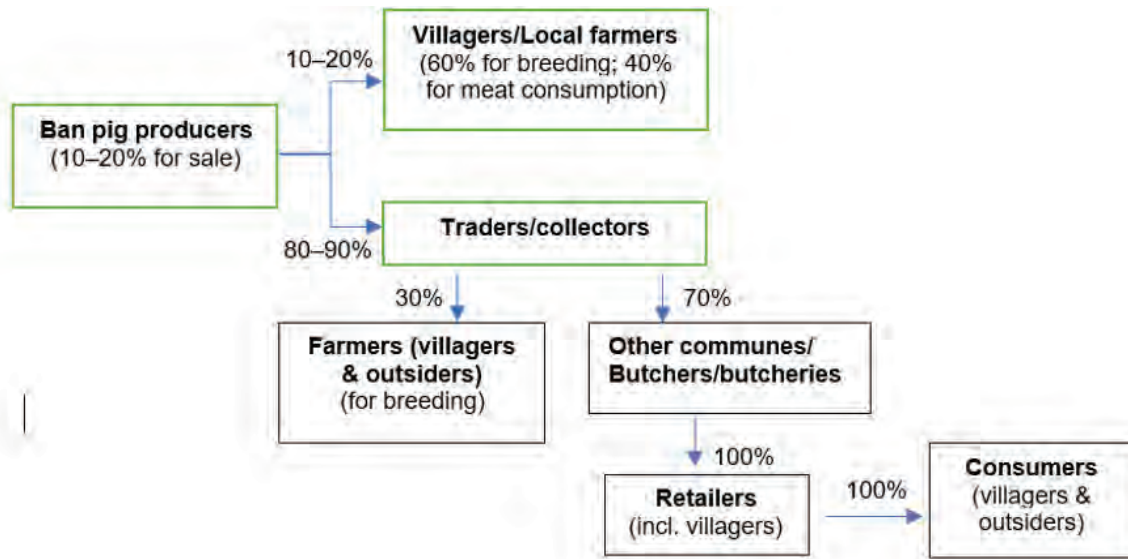
Cities of Son La and Hanoi were added as a reference for the main urban/downstream markets.

Flow of products and linkages

The pig value chains of the three selected villages were similar in many ways including in marketing, length of chain, trading shares, and seasonality but differed in products and marketing potential.

The lowland or type A village (i.e. Mon) had two pig value chains: one for local or Ban pigs (Figure 4) and the other for crossbred or white pigs (Figure 5). These were small-scale chains where most farmers had fewer than six pigs, mainly for household consumption. Only 10–20% of Ban pigs were sold. Larger farms with more than 10 pigs sometimes sold up to 50% of their pigs.

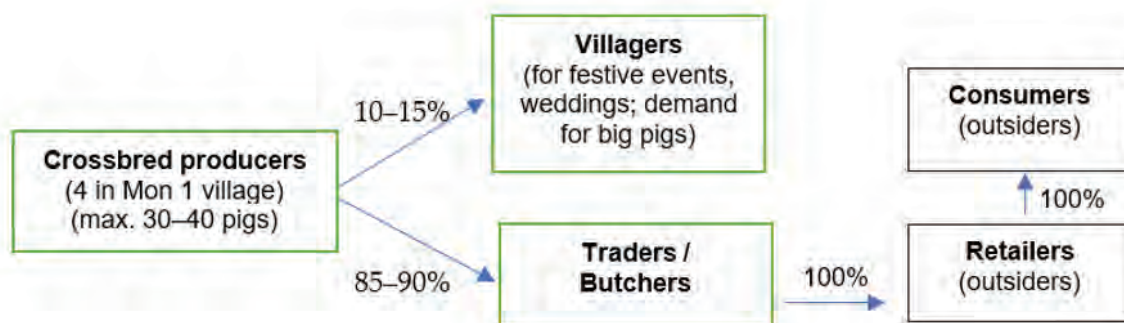
Figure 4. Local or Ban pig value chain in Mon village (Type A)



For Ban pigs, 80–90% of these pigs are marketed to traders or collectors who sell 70% to buyers outside the village, signaling high demand for local pigs from outsiders (Figure 4).

For the local market, villagers traditionally prefer Ban pigs for consumption and breeding. According to these farmers, crossbred pigs are heavier than the local breed (i.e. Ban pig) and are mainly for sale to traders or collectors (85–90%). Villagers demand crossbred pigs (10–15%) when they needed big pigs to serve during festive events such as weddings (Figure 5).

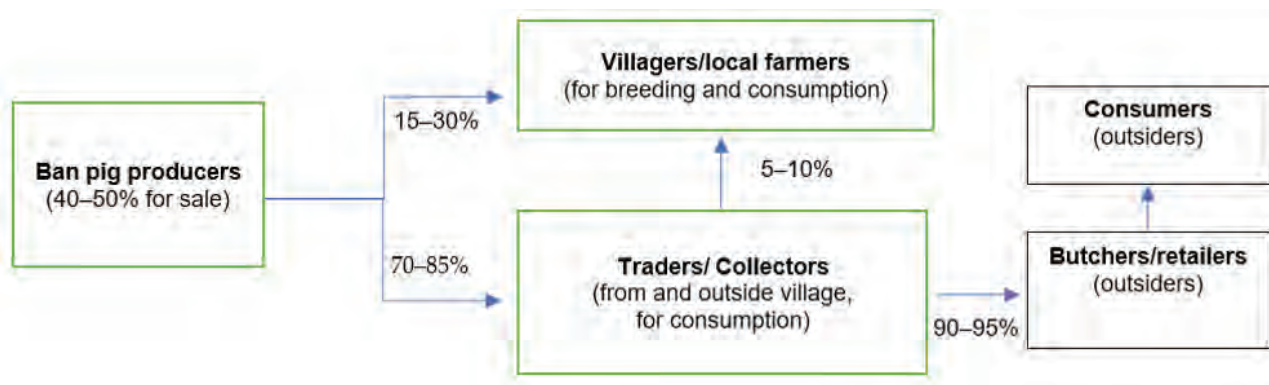
Figure 5. Crossbred or white pig value chain in Mon village (type A)



In the midland or type B village (i.e. Oi), local farmers raise only Ban pigs and at a slightly smaller scale than lowland farmers, but they sell more of these pigs (40–50%) (Figure 6). These villages have about five collectors. Traders and collectors buy 70–85% of pigs for slaughter and consumption outside of the village. A small portion of marketed pigs (15–30%) remain within the village for breeding and consumption (meat). Some large producers (more than five pigs) sell 100% of their pigs to collectors for meat but sell sows only to villagers or relatives. Smaller-scale farmers keep their pigs for household use only.

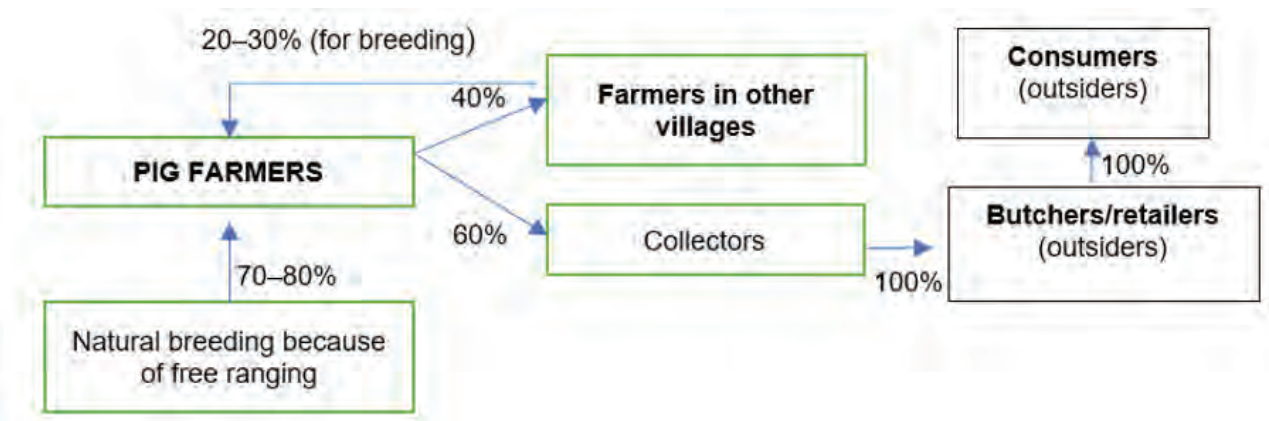
Crossbred or white pigs were raised once in 2016 but this was unsuccessful. At that time, farmers bought these animals at high prices but then faced very low output prices (i.e. VND19,000/kg for crossbred pig versus VND30,000/kg for Ban pig). Thus, no crossbred pig production or marketing was recorded in the type B village.

Figure 6. Local or Ban pig value chain in Oi village (type B)



The highland or type C village (i.e. Xam Ta) reported only on the small-scale Ban pig value chain (Figure 7) as farmers do not raise crossbred pigs. The current pig herd size for all households here was smaller than in 2019 due to the spread of Edema disease earlier in the year (2020). Collectors play a smaller role in buying pigs from local farmers. Perhaps the remoteness of this highland village, particularly the difficult road access, limit marketing opportunities.

Figure 7. Local or Ban pig value chain in a highland village Xam Ta (type C)



In all four value chains, pigs are always traded by face-to-face price setting. Sellers and buyers negotiate prices with a fairly equal bargaining power; because pigs are smaller than cattle, farmers use a weighing scale. Many farmers said that if they felt the prices were not favorable, they would rather keep their pigs for later sale.

In these villages, prices of local pigs for breeding varied from VND150,000–180,000/kg for a piglet less than 10 kg to VND110,000–120,000/kg for pigs more than 10 kg. Meanwhile, the output prices of local pigs may reach

VND80,000/kg for a local pig of more than 60 kg, or VND75,000/kg for those less than 30 kg per head. Further down the value chain, retail prices of local pork can be as high as VND110,000/kg.

The seasonality of pig value chains in the three visited villages focuses on the year end (December) and on the Tet holiday (usually in January) (Table 6). In the lowland, people also consume more pigs on Independence Day in September. In the midland, villagers consume more pigs during the wedding season from September to December.

Table 6. Seasonality of pig marketing

Area	Months				
	1	2–8	9	10–11	12
Lowland	Peak for Tet	–	More sale for Independence Day		Peak for Tet
Midland	Peak for Tet	–	More sales during wedding season		Peak for Tet
Highland	Peak for Tet	–			Peak for Tet

Source: FGD data (2020)

Constraints

Key constraints in pig production that local farmers mentioned during the group discussions are their breeding practices, lack of capital and disease management. Many farmers use the traditional rearing practice of free ranging which allows natural breeding without any control of mating. They observe the degradation of local pig quality but don't know how to change this. In order to shift from free ranging to controlled farming, for instance by using feedlots or stalls, they would need to invest in shelters and feeds, which require capital that they cannot raise. In addition, local farmers stressed they had inadequate knowledge and skills to manage pig diseases.

Pig collectors mentioned a single key constraint when sourcing pigs. Because most farmers raise pigs at small scale, pig collectors must source pigs from several farmers in different places to meet the volumes they need. Road infrastructure, especially in type B and type C villages, is often very poor and even impassable during the rainy season. Besides, they said demand had decreased sharply recently because of the impacts of covid-19, a constraint other downstream actors—butchers, retailers and processors—also faced.

Specialty products (potential for branding)

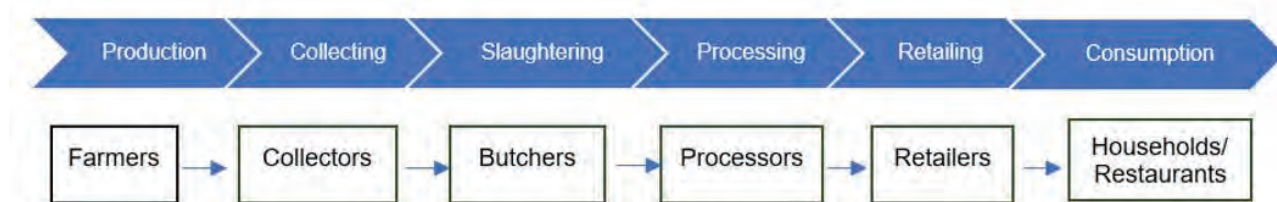
Although keeping of Ban pigs is a tradition in the three selected villages and pig meat is regularly processed into traditional products, farmers sell only live pigs. Pork is processed for household consumption only and not for sale. Popular traditional dishes are dried, grilled, and steamed pork. Thai villagers have a long tradition of preparing dishes from pork for various festivities. Many participants reported that local farmers and their guests view these dishes as especially delicious. This may imply a good marketing opportunity that could open new livelihoods for local smallholder farmers.

3.2 Large ruminant value chain

Value chain actors and their roles

Similar to the pig value chain, the large ruminant value chain for beef from cattle and buffaloes has five functions: production, collection, slaughtering, processing and retailing (see Figure 8).

Figure 8. Generic value chain of large ruminants in Mai Son district



Farmers

In the three selected villages, cattle/buffalo farmers are smallholders, as seen in the pig value chains. Male and female participants in our focus groups confirmed that most local farmers keep one to three cattle or buffaloes (Table 7), and the distinction between large, medium and small scales was not clear. Local farmers keep only the local cattle breed, also called Yellow cattle. No crossbred cattle were recorded. In addition, it appears that farmers in the highland keep slightly more cattle than those in the lowland. On the other hand, lowland farmers tend to keep more buffaloes, which are often bigger than local cattle. Most participants in the focus groups said the size of these animals influences the choices of farmers. Bigger animals may face difficulties when herding and working on hills or slopes.

Table 7. Characteristics of cattle/buffalo farmers in focus groups

Cattle/buffalo farmers	No. of FGD participants	Age of participants (years)		Buffaloes/ household (hh) (#)		Cattle/hh (#)	
		Mean	SD	Mean	SD	Mean	SD
Farm type							
A – Lowland	18	35.0	13.1	1.7	1.2	1.4	2.6
B – Midland	18	33.8	5.4	1.2	1.2	1.7	1.8
C – Highland	11	31.6	9.5	0.0	0.0	5.5	4.5
Total	47	33.8	9.8	1.1	1.2	2.5	3.3
Gender							
Female	19	32.2	5.8	1.4	1.2	2.1	2.7
Male	28	34.9	11.7	0.9	1.2	2.8	3.7
Total	47	33.8	9.8	1.1	1.2	2.5	3.3

Source: FGD data, 2020

Other actors from KII

KIIs were conducted with 10 people working in different nodes of the large ruminant value chain (Table 8). All five collectors of large ruminants are male, mostly because the job demands time and strength. All collectors are Thai, live in villages and have long relationships with the community. Of the two interviewed butchers one is Kinh, the other is Thai.

Table 8. Characteristics of key informants in the large ruminants value chain

	Collectors	Butchers	Retailers	Processors
Number of KIIs	6	2	1	1
Gender				
Male	6	1	1	1
Female	–	1	–	–
Age (mean, years)	51	36	–	54
Ethnicity				
Kinh	1	1	–	1
Thai	5	1	1	–

Source: KII data (2020)

Collectors

Collectors buy cattle and buffaloes from farmers in different places including from their own villages, from other villagers in the commune or from other communes and districts. None of them move to other provinces to buy large ruminants. They source 60–70% of buffalo calves from farmers in the commune and the remaining 30–40% from other communes.

The quantity of cattle or buffaloes bought varies among collectors and ranges from 4–10 animals/month. Collectors never use a scale to weigh the animals. Instead, they observe them to estimate meat weight based on experience, and pay accordingly, normally VND200,000–220,000/kg of estimated meat yield (higher for buffaloes). Collectors prefer cattle and buffaloes that are raised naturally by the H'Mong because they perceive these animals have better quality. Collectors do not like to buy old cattle or female cattle that have calved, because their meat is tougher. Fat cattle at a younger age (1–2 years) and heifers are preferred because they have higher meat rate and are easier to sell to other farmers for fattening or for reproducing. None of the collectors are buying crossbred cattle (Laisind).

Collectors sell animals in their villages and communes, especially at Co Noi market, to various customers including farmers, other traders and butchers. The average trading volume ranges from 1–5 cattle/deal, providing a margin of VND500,000/head for the collectors. Depending on the purpose, buyers are looking for different qualities:

Farmers: “good cattle” called “đẹp” cattle—look healthy, fat, and have potential to be productive cows

Village households buying for home consumption: small cattle (50 kg of meat) of local breed

Local butchers: local breed, fat, male, young cattle with a smooth coat, 50–70 kg meat

- Collectors: those transporting cattle to other provinces prefer fat, bigger cattle, accepting crossbred cattle; local collectors prefer local breeds and might accept thin cattle to finish them.

The number of animal collectors trade has tended to increase over time due to an increasing population of cattle and buffaloes. More farmers are interested in raising large ruminants, leading to more demand for growing animals for fattening or female cows for reproducing. Besides, the relationship between collectors and their suppliers has also improved over time.

Similar to the pig value chains, the number of collectors operating in Mai Son has increased. Collecting cattle does not take too much time and can be done while managing crops, or during free time. Also, it is said that the task is not too hard, “therefore, there are more people that want to be collectors”, according to one collector.

Butchers

Mai Son district has four butchers specializing on cattle and buffaloes. Two (one in Hat Lot town and one in Muong Chanh commune) were selected for interviews in the study. Similar to the pig value chains, beef butchers have multiple functions including slaughtering live animals and retailing meat. The average capacity of the interviewed butchers is from 15–20 animals/month, all of local breeds.

Beef butchers slaughter only small animals (50–90 kg of meat) and sell bigger animals to other collectors for transport to other places (other provinces or China). About 70% of large ruminants are bought directly from farmers with the rest being supplied by collectors (two to three collectors in Chieng Luong and four to five collectors in Co Noi commune, according to one butcher). Buying livestock from farmers is cheaper than from collectors but requires travelling long distances, and this takes time.

These butchers sell beef at markets in Hat Lot and Muong Chanh communes; their main buyers are household consumers, other retailers, and restaurants. Generally, buyers prefer beef from local cattle, with mild texture — not too hard and not too soft, fresh with high viscosity, and red color. The ethnic groups have different preferences for beef: Kinh consumers prefer high quality or grade A meat pieces (e.g. loin, shank, etc.), Thais prefer lower quality or grade C

meat pieces (belly, fatty meat, organs) to serve with pia — a sauce taken from the intestines. Restaurants buy bones to make soup. At the time of the interviews, market prices were VND250,000/kg for grade A meat, VND150,000/kg for grade C meat, and VND50,000/kg for skin.

Beef butchers interviewed also reported that trading volumes have recently reduced.

Retailers

One beef retailer interviewed is based in Ham village, Chieng Chung commune. He has a shop in the village that serves only village customers. This retailer buys belly meat and organs from other beef retailers in Mai Son (because of very low volumes, the retailer does not go to butchers). He buys organ meat (intestines) at between VND80.000/kg and VND180.000/kg. The only constraint reported is low demand. He also sells other products such as agricultural inputs, groceries, and pork. During the peak cropping season, he stops selling beef and focuses on agricultural inputs.

Traditionally, Thais eat beef with pia, a sauce taken from the intestinal organs of large ruminants. Consequently, this retailer also sells pia together with beef. He also reported that his trading volume has not changed for years, and that only one other retailer is selling beef in the village.

Processors

The processor interviewed in the large ruminant value chain was the same one in the pig value chain. This person processes pork, beef from cattle and buffaloes, and even horse meat.

The processor normally buys about 1.5 ton of fresh beef in a month for processing, at an average price of VND240.000/kg. He prefers meat from local cattle breeds compared with crossbreds: "I don't buy beef from crossbred cow for processing because dried products look like pork and are less tasty".

The processor selects only the best quality meat pieces (e.g. beef shank and meat cuts having vertical fibers). He has signed a contract with a butcher in Mai Son to supply him with beef.

The processor sells his products to local consumers and retailers, and to consumers and restaurants in other provinces (to more than 10 restaurants in Hanoi). At the time of the interview, this unit was only producing about 3 kg of dried beef per day. The processor reported the quantity sold this year (2020) had dropped significantly, especially to buyers such as other retailers and restaurants.

Other actors from the public sector (vets, extension staff, etc.)

Veterinary staff. Similar to pig production, veterinary services related to cattle production are facing considerable challenges due to the low capacity of veterinary staff, inadequate equipment (tools for work), limited awareness of farmers, and dispersed, small-scale cattle production. The main points mentioned are:

Fear of vaccinations: cattle are highly valued (i.e. normally valued at about VND10 million for an animal yielding 50 kg meat, and farmers are hesitant to have them vaccinated, fearing that they might die. It is even more difficult to persuade farmers to have the cattle vaccinated if they are pregnant.

Scattered production: some farmers free range their cattle in the forest (Xanh forest), quite a distance away; these farmers usually have larger herds (8–10).

Risky work for veterinary staff: travelling on hilly roads is risky (especially during bad weather condition) when staff approach cattle for vaccinations, as well as attacks by cattle during treatment.

Thu also pointed out several difficulties farmers face in cattle production and marketing: (i) lack of capital to expand production of cattle, especially of crossbreds (Laisind), (ii) poor road conditions for transport, and (iii) lack of feed sources; not many farmers can make silage and store feeds for the dry season.

Extension staff. Cam Van Huoi mentioned that in 2015, two to three training sessions were held to train farmers in how to raise cattle, plant grass and make silage, but none has been held since then. In Chieng Luong commune, farmers in Mon and Chi villages are better at making silage for cattle. He continues to communicate and guide farmers in cattle production, but only with those who request his support. "Offering training is more difficult now because we don't provide allowances for the trainees, while farmers have got used to trainings and workshops offered by companies providing agricultural inputs and feeds with allowances" said Huoi.

According to him, farmers are becoming more aware of producing grass for cattle, but the area reserved for planting grass is usually mixed with other crops. Only a few farmers have spared 2,000–4,000 m² for grass. Farmers in lowland villages are more interested in planting fodder grass, the H'Mong people in upland villages show little interest. At present, hybrid banana is also planted to feed cattle for higher productivity and cattle appear to like it (see Figure 9).

Figure 9. Hybrid banana



Cooperative director and farmer member. Amo Green Agricultural Cooperative is the only cooperative involved in cattle production and beef processing in Chieng Luong. The cooperative has 12 members with a combined herd of 40–50 cattle. The cooperative director plans to connect farmers (particularly young farmers) in the commune so that they can have a larger herd and better bargaining power and provide them with contacts of cattle collectors.

Once cattle are slaughtered in Chieng Mung, fresh meat is brought to the Ha Vu processing unit. The cooperative plans to start drying meat (beef from cattle and buffalo) though it has no drying facilities at present.

Flow of products and linkages

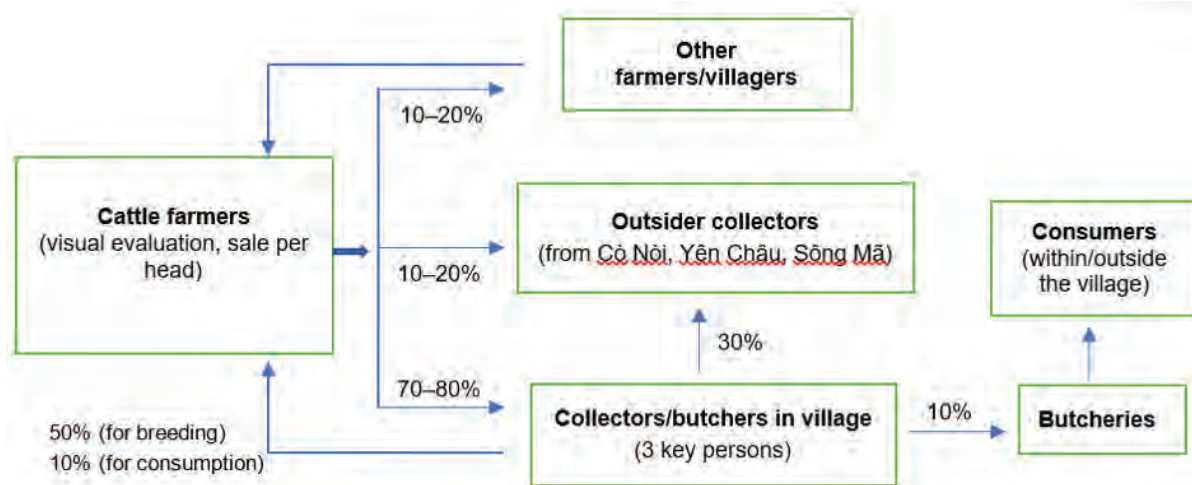
The beef value chains of the three selected villages were similar in many ways including in marketing, length of chains, trading shares, and seasonality. However, they differed in products and marketing potential.

The lowland or type A village (i.e. Mon) has only one value chain of local beef cattle (Figure 10). A few producers had experimented with crossbred cattle in the past but did not want to keep them anymore. The reason was that Laisind (crossbred) cattle fetched very low prices compared with the local breed. Smaller size and better meat quality were highlighted as advantages of the local cattle breed. Because buffaloes are mainly kept for draft purposes they are slaughtered only irregularly. However, when slaughtered, their meat is included in the local cattle value chain.

Most farmers kept less than five large ruminants, indicating small-scale production. Farmer participants estimated that roughly 180 out of the 252 households in the village owned one to two cattle or buffalo. They kept them mainly as draft animals and for sale. Besides, in the local tradition, a wedding may demand the slaughter of up to three large ruminants for festive purposes: one for the proposal and two for the wedding where both the bride's and the groom's family offer one animal each.

Local lowland farmers usually sell cattle and buffaloes (70–80%) to three local collectors in their village (Figure 10). They also buy breeding cattle (70%) from these collectors. Farmers generally sell their animals after keeping them for two years. A head of cattle can be sold for VND20–22 million. A productive cow often gets a higher price, about VND1–2 million; otherwise, bulls are more expensive than females. A buffalo can be sold for VND40–45 million. Although the village is closer to the main road than the other two visited villages (types B and C), the share of outsider collectors was fairly small (10–20%). Perhaps the proximity and activeness of the local collectors in the village explains the difference.

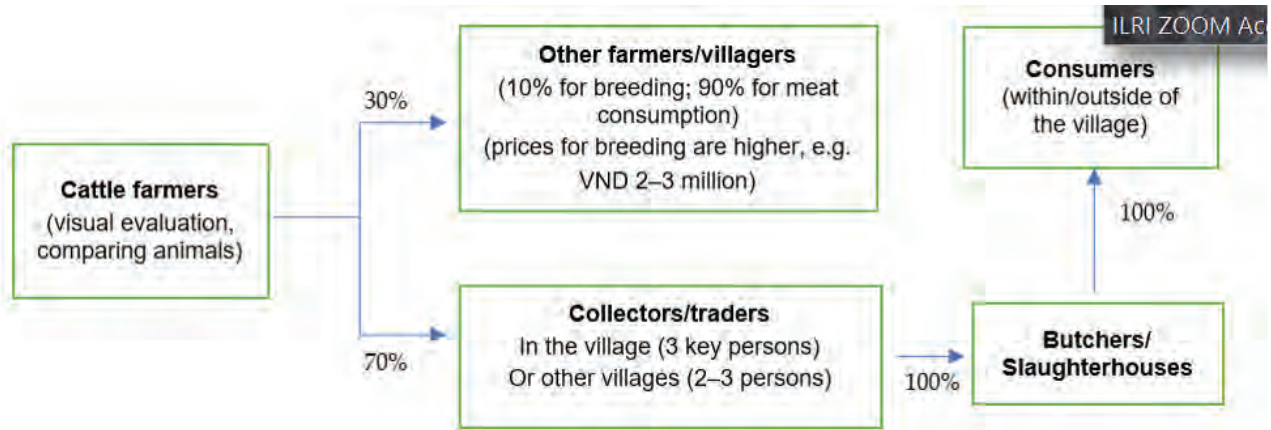
Figure 10. Local beef cattle value chain in Mon village (type A)



In the midland or type B village (i.e. Oi), although at a slightly higher altitude and more remote than farmers in the lowland, the structure of the beef cattle value chain is similar (Figure 11 vs Figure 10). Local collectors play an important role in the cattle trade (with a share of 70%).

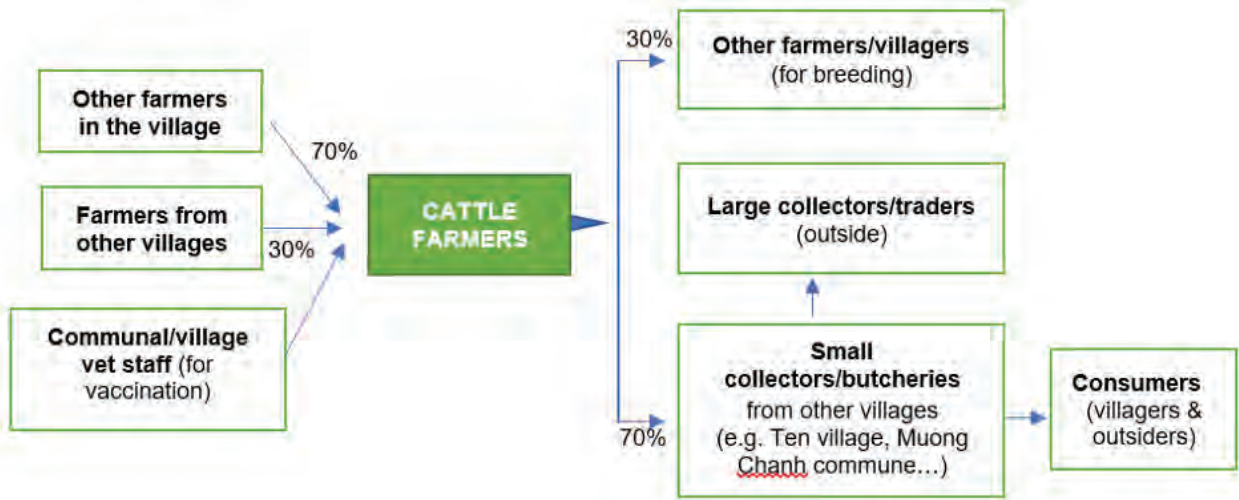
Compared with cattle keeping in the lowland, midland farmers appear to keep larger herds. The proportion of farmers raising three cattle and above almost equals that of farmers with one to two cattle. Nevertheless, small-scale cattle production dominates in this farming system. Whether small or large producers, farmers keep cattle for multiple purposes: ploughing, marketing and family/social events (i.e. weddings, funerals, and Independence Day celebrations). Although local farmers sell cattle more during the Tet holiday, traditionally, they do not consume much beef meat during this event.

Figure 11. Local beef cattle value chain in Oi village (type B)



Although the general structure of the cattle value chain in the highland or type C village (i.e. Xam Ta) is similar to that in the midland and lowland areas (Figure 12), some differences are notable. For breeding inputs, cattle farmers source 70% from other farmers in the village and 30% from farmers in other villages. Key buyers of cattle are collectors or butchers from outside the village. In other words, local collectors within the village do not play as strong a role as they do in the midland and lowland. In addition, being in a remote area, local farmers showed a stronger appreciation of local veterinary staff. This is probably because they cannot travel easily to other vet stores in the lowland, so they are more likely to rely on the services of the communal and village vet staff.

Figure 12. Local beef cattle value chain in Xam Ta village (type C)



Similar to pigs, trading cattle or buffalo requires buyers and sellers to meet in person. However, unlike pigs, cattle and buffalo are valuable assets to local farmers and they will only sell them for special events. These small farmers often experience price bullying because they have less market information compared with their buyers who are traders, collectors or butchers. Although negotiations allow both parties to accept or refuse a deal, farmers reported that as sellers they often feel disadvantaged because they have little experience in evaluating cattle visually. In the local context, no one uses scales to weigh large ruminants.

In these villages, farmers can sell their cattle at a peak price of VND20–22 million/head, producing 100 kg of lean meat according to visual evaluation. This cattle price translates to VND80,000–100,000/kg liveweight because of their low carcass ratio. In the local wet markets, beef prices vary between VND230,000 and 250,000/kg while cattle offals may be sold at much lower prices, often less than VND100,000/kg.

The seasonality of the large ruminant value chain in the three villages also focuses on the year end (December) and the Tet holiday, usually in January (Table 9). In the midland, people also consume more cattle during Independence Day (August) and sell more cattle in September to earn cash for sending their children to school.

Table 9. Seasonality of marketing large ruminants

Area	Month					
	1	2–7	8	9	10–11	12
Lowland	Peak for Tet	–	–	–	–	Peak for Tet
Midland	Peak for Tet	–	Peak for Independence Day	Peak for cash to send children to school (new semester)	–	Peak for Tet
Highland	Peak for Tet	–	–	–	–	Peak for Tet

Source: FGD data (2020)

Constraints

The key constraints local farmers faced in producing buffalo and cattle for beef were breeding and feeding techniques. Only in type A villages do a few farmers know the techniques of silage feed fermentation, thus they are more proactive in storing feed after harvest seasons for feeding animals in the dry winter season. Farmers in type B and type C villages do not know these techniques and therefore rely mainly on green feed sources to feed animals throughout the year. However, with the development of crop production, natural pasture areas in these villages are decreasing, which is leading to increasing feed shortages, especially during the dry season.

The farmers also reported genetic deterioration of their large ruminants. Following their traditions, farmers in all village types retain only good females for reproduction but allow for uncontrolled natural mating. In the long term and within a small geographical area, this practice may result in decreasing genetic potential and cattle productivity.

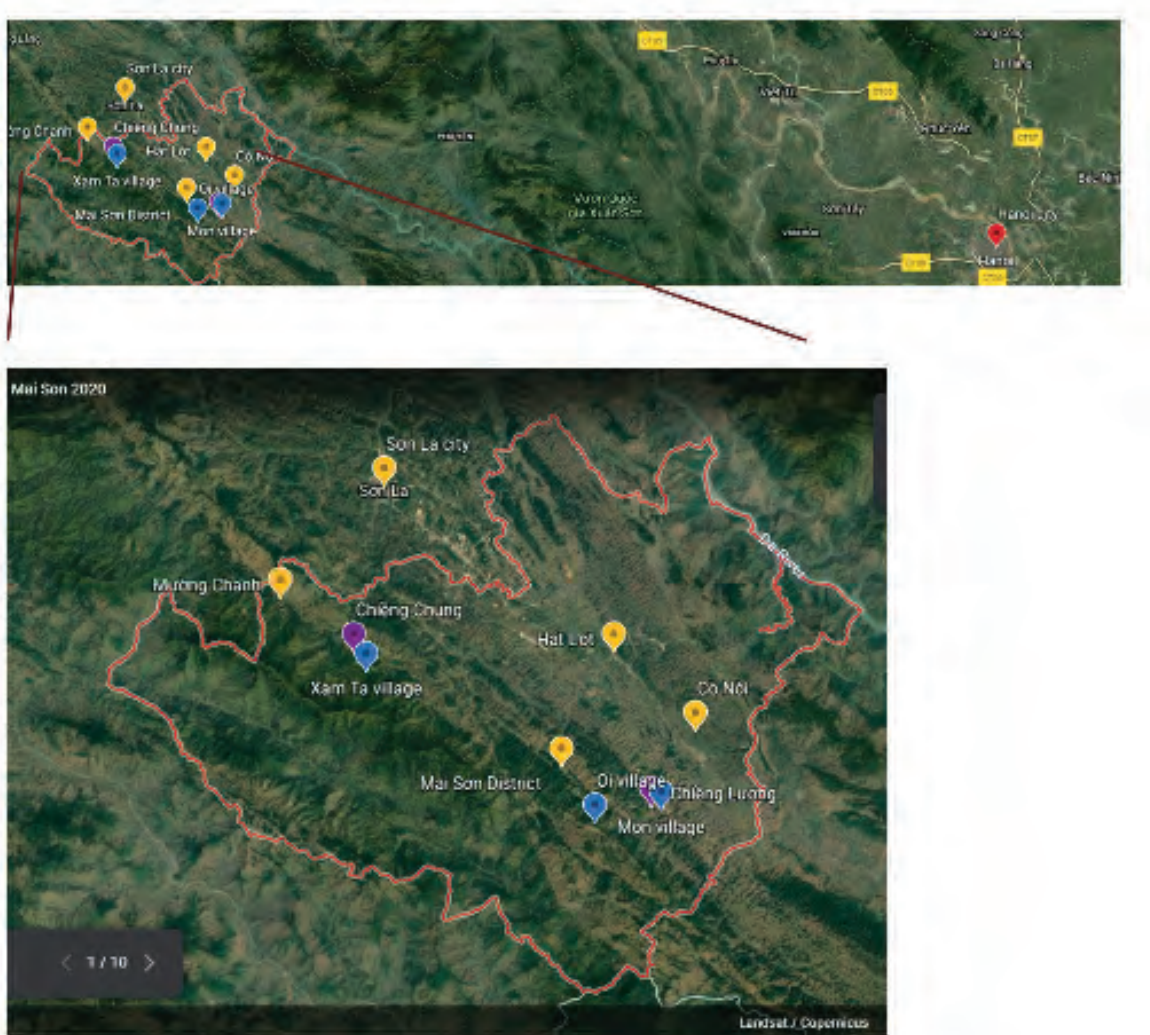
Farmers did not mention marketing as a key constraint. This is understandable because for small-scale farmers, large ruminants (buffaloes and cattle) are mainly considered an asset or a living bank investment rather than a regularly marketed product. Consequently, farmers consider selling cattle and buffaloes mainly when market prices go up. Even in times of urgent cash needs they would prefer to sell other animals, such as pigs, or take a loan rather than selling their large ruminants for a low price.

Similar to the case of pigs, collectors reported low demand for beef as one of their main constraints in recent months. Therefore, they feel less incentivized to go, search and buy cattle and buffaloes. Poor road conditions also challenge animal transport, especially during the rainy season. Besides, farmers often ask for the price offered to their neighbor's animals in a recent deal, setting a base price for negotiating with collectors. This initial price is sometimes much higher than the prevailing market price, and the deal fails. Consequently, collectors complained that the low prices they offer for the animals could lead to their getting a bad reputation among community, and thus affect their business.

Other downstream actors—butchers, retailers and processors—reported as their key constraint low demand due to Covid-19 impacts.

Location map of value chain actors

Figure 13. Geo-locations of interviewed actors in the large ruminant value chain in Mai Son district (red boundary)



Source: Authors' identification of locations on Google Earth, 2020

Legend:

Purple – communes of Chieng Luong and Chieng Chung

Blue – villages of Mon, Oi (Chieng Luong commune) and Xam Ta (Chieng Chung commune) where cattle farmers were interviewed

Yellow – other places in Son La province where various middlemen were interviewed: collectors in villages, communes and Co Noi town; butchers in Hat Lot town and Muong Chanh commune; retailers in villages; and processors in cities of Son La and Hanoi

Red – City of Hanoi

Specialty products (potential for branding)

Similar to pig products, local farmers sold only live cattle, not slaughtered carcasses or processed products. Traditional dishes from cattle meat were prepared only for household consumption, although villagers are skilled at cooking or preparing these foods. The issues were the size of production and the small carcass ratio of local cattle breeds. When villagers slaughter cattle, this is generally for a special event and they have just enough meat for that event. Nevertheless, this also implies a market potential for processed beef products.

Fortunately, the A Mo cooperative in Mai Son district has been interested in producing dried cattle and buffalo meat. This cooperative has 12 household members who collectively raise 40–50 large ruminants (cattle and buffaloes). The cooperative has proposed linking young farmers in different communes to develop their animal husbandry and for selling animals in larger volumes. They hope this will increase their bargaining power. Currently, they have established a good collecting network with focal points in different communes (including Chieng Luong) to collect a larger number of live cattle and buffaloes for sale. Besides selling live animals, they are also considering branding and selling dried cattle and buffalo meat. However, the key issue is that the cooperative does not own a slaughtering facility or a commercial-scale meat dryer to produce dried meat. At the moment, when the cooperative gets orders for dried meat, they take their animals to a butcher in Chieng Mung commune and then collaborate with the Ha Vu processor (mentioned above) to produce dried beef. The cooperative plans to invest in a dryer next year (2021) with the support of the local government. During this study, we realized the cooperative is the only potential additional candidate for producing branded dried meat products in Mai Son district.

4 Conclusion and recommendations

Results of this market study have highlighted the linkages and interactions characterizing the pig and large ruminant value chains in three village categories in Mai Son district, Son La province.

4.1 Pig value chain

Except in type A village where crossbred pigs are raised together with local pigs, farmers in type B and C villages raise only local pigs. Pig production contributes modestly to household income, and for many households they are raised mainly for home consumption. The production of local pigs could potentially improve household livelihoods in the communes, given their high market demand and farmers' rich experience in rearing these pigs.

Due to small-scale production and the poor road conditions to the villages, producers have few chances to directly sell their animals to other downstream actors such as traders, butchers or processors and instead mainly deal only with village collectors. In these value chains, a significant number of village collectors play an important role as gatekeepers of market information. This fact might lower the bargaining power of farmers and consequently provide them little incentive to increase production.

In addition to technical interventions on breeding, animal feed, animal health to improve productivity, collective action would allow smallholders to access more lucrative markets and also to improve their bargaining power when selling animals. Forming a group of farmers to increase the number of pigs marketed each time is an intervention with potential to link them directly to "preferred" collectors/traders or butchers, especially those in Hat Lot town.

4.2 Large ruminant value chain

The large ruminant value chain for beef from cattle and buffaloes is also characterized by small-scale production and loose linkages among actors. Village collectors play an important role because traders or butchers find it difficult to reach farmers in the villages to buy small volumes. However, cattle production and marketing in Mai Son district has a high potential to develop in the future, driven by the following:

- Demand for beef (especially from local cattle) exists from household consumers (especially Thai people) and processors. Processed products from local cattle could be developed as specialty products of Mai Son district.
- Rearing cattle is considered less risky than rearing pigs because they suffer from fewer diseases and farmers can keep cattle until they are willing to sell.
- Feeding innovations: by-products from crop production, such as from maize, rice, sugarcane have been underutilized; hybrid banana has recently been found to be a potential feed source, complementing grass as the dominant cattle feed in the communes.

To develop the value chain, in addition to technical interventions on production, a farmer group should be formed to achieve higher volumes of animals marketed at a time, helping farmers to better connect with larger buyers and therefore to earn higher benefits. This will induce farmers to gradually shift from the current subsistence production to market-oriented production.

Supporting producer groups to process and market specialized high-value products is also seen as an efficient intervention to improve the livelihoods of farmers and other actors in the value chains. Currently, the local authority in Mai Son district is progressing with the development of a brand for dried beef under a national program called "One Community One Product", or OCOP. This program encourages each community to develop one competitive and marketable product based on its local competitive advantages (local resources and knowledge). The local authority is supporting A Mon cooperative to develop the OCOP brand for dried beef from cattle and buffalo meat. External support is needed to help the cooperative meet the requirements of evidence regarding ingredients, packaging and labelling and traceability.

Appendix

Appendix 1. FGD checklist

Overview

Characteristics of producers belonging to different production scale (small, medium, large) and different market-oriented strategies (mainly for home consumption or mainly for sale)

Importance of the targeted livestock species based on their relative livelihood contributions (labor, income share, land use, etc.), by production scale and market-oriented strategies

Value chain mapping

Map value chain for the targeted livestock species

+ identify main value chain actors

+ flow of products

+ volume shares

+ transaction governance, etc.

- Seasonality: identify flush/lean months in inputs and outputs – show magnitude of difference
- Identify and rank major constraints (up to 5)
- Characterize top 1 (why important, underlying issues, effects on different stakeholders (gender, poverty, age, etc.))
- Brief VC history 5 years (major changes in volume, actors, products, etc. compared with current situation)
- Brief outlook for the next 5 years (maybe 5 years is more realistic)
- Identify and rank major opportunities for VC improvements (up to 5)
- Discuss top 1 or 2 (strengths/weaknesses, effects on different stakeholders ...)
- Based on this, what would an intervention look like?

Specialty products (e.g. naturally raised pigs of indigenous breeds, dried beef/buffalo meat)

Current situation of production of the specialty products: indicate which one and get a description

+ Number of households in the village involved in this business

+ Characteristics of those households (income, market access, ethnic group, etc.)

+ Market size

Value chain mapping of the speciality products following the above guideline (VC map, seasonality, history, constraints, opportunities, expected interventions)

Appendix 2. FGD participants (n=96)

Value chain	Ethnic	FGD	Name	Sex	Age (yrs)	Current number		
						Buffalo	Cattle	Pigs
Oi village, Chiềng Lương commune (midland)								
Cattle	Thai	1	Nguyễn	Male	27	2	0	N/A
Cattle	Thai	1	Toàn	Male	37	1	1	N/A
Cattle	Thai	1	Mai	Male	43	0	1	N/A
Cattle	Thai	1	Dũng	Male	34	3	0	N/A
Cattle	Thai	1	Hà Văn Văn	Male	30	2	0	N/A
Cattle	Thai	1	Xuân	Male	40	2	0	N/A
Cattle	Thai	1	Tấn	Male	28	0	4	N/A
Cattle	Thai	1	Lương Văn Lùn	Male	38	0	5	N/A
Cattle	Thai	1	Oang	Male	28	0	2	N/A
Cattle	Thai	2	Lương thị Inh	Female	30	1	0	N/A
Cattle	Thai	2	Lò Thị Khuyên	Female	26	0	6	N/A
Cattle	Thai	2	Lương Thị Quán	Female	29	0	1	N/A
Cattle	Thai	2	Lương Thị Cong	Female	35	0	1	N/A
Cattle	Thai	2	Lò Thị Bốn	Female	44	2	3	N/A
Cattle	Thai	2	Lèo Thị Chiến	Female	37	2	3	N/A
Cattle	Thai	2	Hà Thị Doan	Female	33	3	2	N/A
Cattle	Thai	2	Lương Thị Liễn	Female	36	0	0	N/A
Cattle	Thai	2	Cầm Thị Nò	Female	34	3	1	N/A
Pig	Thai	3	Lương Văn Quý	Male	60	N/A	N/A	1
Pig	Thai	3	Hà Văn Dũng	Male	37	N/A	N/A	4
Pig	Thai	3	Lương Văn Châm	Male	47	N/A	N/A	2
Pig	Thai	3	Lương Văn Sâm	Male	31	N/A	N/A	3
Pig	Thai	3	Quàng Văn Dũng	Male	34	N/A	N/A	4
Pig	Thai	3	Lương Văn Mai	Male	43	N/A	N/A	12
Pig	Thai	3	Lương Văn Điện	Male	33	N/A	N/A	2
Pig	Thai	3	Hà Văn Văn	Male	30	N/A	N/A	8
Pig	Thai	4	Lèo Thị Chiến	Female	37	N/A	N/A	2
Pig	Thai	4	Lương Thị Cong	Female	35	N/A	N/A	4
Pig	Thai	4	Lò Thị Khuyên	Female	26	N/A	N/A	6
Pig	Thai	4	Lương Thị Liễn	Female	36	N/A	N/A	3
Pig	Thai	4	Lương thị Inh	Female	30	N/A	N/A	8
Pig	Thai	4	Lương Thị Quán	Female	29	N/A	N/A	12
Pig	Thai	4	Cầm Thị Nò	Female	34	N/A	N/A	10
Pig	Thai	4	Hà Thị Miên	Female	26	N/A	N/A	1
Pig	Thai	4	Lương Thị Thu	Female	40	N/A	N/A	2
Pig	Thai	4	Hà Văn Loa	Male	42	N/A	N/A	3
Pig	Thai	4	Hà Văn Tiến	Male	51	N/A	N/A	8
Pig	Thai	4	Lò Văn Xuân	Male	38	N/A	N/A	2

Value chain	Ethnic	FGD	Name	Sex	Age (yrs)	Current number		
						Buffalo	Cattle	Pigs
Mon village, Chiềng Lương commune (lowland)								
Cattle	Thai	5	Cường	Male	33	1	0	N/A
Cattle	Thai	5	Ảnh	Male	34	1	0	N/A
Cattle	Thai	5	Phong	Male	16	2	1	N/A
Cattle	Thai	5	Nam	Male	19	4	0	N/A
Cattle	Thai	5	Lưu	Male	48	1	0	N/A
Cattle	Thai	5	Thạch	Male	57	2	0	N/A
Cattle	Thai	5	Tâm	Male	52	3	1	N/A
Cattle	Thai	5	Cương	Male	64	0	1	N/A
Cattle	Thai	6	Lò Thị Khoáng	Female	30	0	5	N/A
Cattle	Thai	6	Lường Thị Chuông	Female	27	1	4	N/A
Cattle	Thai	6	Quàng Thị Thuấn	Female	30	3	0	N/A
Cattle	Thai	6	Lò Thị Qua	Female	24	1	1	N/A
Cattle	Thai	6	Cầm Thị Hải	Female	38	1	0	N/A
Cattle	Thai	6	Quàng Thị Liên	Female	35	3	0	N/A
Cattle	Thai	6	Hà Thị Mới	Female	23	0	10	N/A
Cattle	Thai	6	Lường Thị Thoa	Female	31	2	2	N/A
Cattle	Thai	6	Cầm Thị Tiết	Female	42	3	0	N/A
Cattle	Thai	6	Quàng Thị Soi	Female	27	2	0	N/A
Pig	Thai	7	Lò Văn Tiện	Male	45	N/A	N/A	3
Pig	Thai	7	Lò Văn Chương	Male	51	N/A	N/A	5
Pig	Thai	7	Hà Văn Hiến	Male	35	N/A	N/A	2
Pig	Thai	7	Quàng Văn Lập	Male	30	N/A	N/A	7
Pig	Thai	7	Hà Văn Piu	Male	29	N/A	N/A	6
Pig	Thai	7	Lường Văn Phin	Male	62	N/A	N/A	18
Pig	Thai	7	Lò Văn Tân	Male	36	N/A	N/A	17
Pig	Thai	8	Quàng Thị Khơi	Female	21	N/A	N/A	6
Pig	Thai	8	Quảng Thị Phước	Female	25	N/A	N/A	0
Pig	Thai	8	Hà Thị Ban	Female	39	N/A	N/A	7
Pig	Thai	8	Cầm Thị Nga	Female	23	N/A	N/A	7
Pig	Thai	8	Cầm Thị Quý	Female	18	N/A	N/A	2
Pig	Thai	8	Cầm Thị Tiểu	Female	26	N/A	N/A	3
Pig	Thai	8	Hà Thị Trang	Female	18	N/A	N/A	5
Pig	Thai	8	Lường Thị Thân	Female	25	N/A	N/A	3
Pig	Thai	8	Lường Thị Phải	Female	47	N/A	N/A	7
Pig	Thai	8	Cầm Thị Thoải	Female	39	N/A	N/A	8
Pig	Thai	8	Cầm Thị Dung	Female	58	N/A	N/A	0

Value chain	Ethnic	FGD	Name	Sex	Age (yrs)	Current number		
						Buffalo	Cattle	Pigs
<i>Xam Ta village, Chiềng Chung commune (highland)</i>								
Cattle	H'Mong	9	Sông A Ly	Male	41	0	1	N/A
Cattle	H'Mong	9	Sông A Chư	Male	32	0	5	N/A
Cattle	H'Mong	9	Phàng A Chơ	Male	27	0	8	N/A
Cattle	H'Mong	9	Sông A Trọng	Male	48	0	12	N/A
Cattle	H'Mong	9	Sông A Vụ	Male	38	0	12	N/A
Cattle	H'Mong	9	Sông A Mùa	Male	16	0	1	N/A
Cattle	H'Mong	9	Sông A Sớ	Male	24	0	1	N/A
Cattle	H'Mong	9	Sông A Dê	Male	33	0	3	N/A
Cattle	H'Mong	9	Sông A Hĩa	Male	26	0	5	N/A
Cattle	H'Mong	9	Sông A Mua	Male	23	0	2	N/A
Cattle	H'Mong	9	Sông A Lông	Male	40	0	11	N/A
Cattle	H'Mong	10	Sông A Châu	Male	57	N/A	N/A	5
Cattle	H'Mong	10	Phàng A Cu	Male	31	N/A	N/A	2
Cattle	H'Mong	10	Sông A Gơ	Male	21	N/A	N/A	2
Cattle	H'Mong	10	Lồ Thị Pạng	Female	26	N/A	N/A	2
Cattle	H'Mong	10	Hờ A Chông	Male	21	N/A	N/A	8
Cattle	H'Mong	10	Giàng Thị Kí	Female	45	N/A	N/A	4
Cattle	H'Mong	10	Sông A Lư	Male	20	N/A	N/A	1
Cattle	H'Mong	10	Phàng A Hụ	Male	40	N/A	N/A	6
Cattle	H'Mong	10	Phàng A Dê	Male	27	N/A	N/A	1
Cattle	H'Mong	10	Vàng Thị Giang	Female	38	N/A	N/A	5
Cattle	H'Mong	10	Giàng Thị Việć	Female	18	N/A	N/A	5

Appendix 3. KII checklist

Topic	Questions/comments
<i>Personal information</i>	
Name and gender	– For established firms/restaurants/retail stores try to get a business card or get telephone number.
Physical business address	– Which marketplace is the business/shop located?
<i>Type of business</i>	
Type of product/ service offered	– Which key products or service does respondent sell or provide?
<i>Sales</i>	
Type of buyer	– To whom do you sell a product or provide a service? If more than one, which are the most important for your business? Rate them in order, from most important to least important
Quantity	– Quantity sold/ provide normally, e.g., per day, week, month
Seasonality	– Are there changes in volume of sale or service over time? In which months of the year do you experience highest/lowest demand for your products?
Price data	– Are there changes in prices over time? If yes, when, how much does the price increase; reasons? Who are the buyers? – When do you usually experience lower prices? By how much do prices go down when compared with 'regular/normal'? What is the main reason for price reduction?
Constraints	– What are key problems in your business? Rank constraints identified
Consumer segments	– Did you notice different types of buyers with specific preferences? Explain the main differences between buyers.
<i>Preferences (needs, wants and special requirements)</i>	
Quality requirements	– When observing and talking to your customers, which product attributes are most important for them? List all the attributes identified and rate them in order, from most important to least important (e.g., age, sex, weight for live animals, freshness of meat, packaging, etc.) – Which of these quality attributes are usually rewarded with a price premium by buyers (e.g., you get a higher price if the product/ service you sell has the preferred attributes), and how much more do you get paid, if any?
Labelling, if any	– Which product information do customers ask about frequently?
<i>Trends</i>	
Changes over the last 5 years	– Changes in volume, actors, products and relationships
Changes in the next 5 years	
<i>Supply</i>	
Source by area	– What is the main geographical area where you source your supplies?
Source by type of person	– From whom do you buy? Which are the most important?
Price and costs (can be offensive; some keep costs and margin secret)	– What is the current purchasing price for the top three varieties/products? List the products and rate them in order from most important to least. For each of these products, do you purchase at a constant price or not? If not, how are prices differentiated? In the case of live animals, what is the age and size preference? – What are your main cost items and costs? a. transport cost, b. communication cost, c. labor cost associated with transport/handling, d. weighing cost (if any), e. other cost associated with transport or handling, f. other cost, list/specify

Topic	Questions/comments
Constraints	– What are key problems in procuring supplies of the product you sell? List all and rate them in order, from most important to least important
<i>Infrastructure</i>	
Storage, if any	– How much do you usually store products and for how long? Which product attributes are important for proper storage?
Transport	– Which type of transport do you use frequently/ prefer?
Grading and sorting, if any	– Do you grade and sort? What attributes of the products are considered of “better grade”? Do better grades fetch higher prices? What price levels per quality grade?
<i>Competition</i>	
Competitors	– How many competitors performing similar functions are in your geographical area? – How are you competitive and performing well, e.g. in price, quality, market share, market location, brand name?

Appendix 4. KIIs participants (n=26)

Name	Sex	Ethnic	Age (yrs)	VC actor	Address	Actor	Product
Lo Van Hai	Male	Thai	31	Yes	Chieng Chung	Retailer	Beef
Dang Thi Thăm	Female	Kinh	36	Yes	Hat Lot market	Butcher, retail	Cattle
Lo Van Quan	Male	Thai		Yes	Mon village	Collector	Cattle
Duong Van Cuong	Male	Kinh		Yes	Mon village	Collector	Cattle
Thao A Chu	Male	Thai		Yes	Farmer	Coop Member	Cattle
Ha Van Tien	Male	Thai	51	Yes	Oil village	Collector	Cattle
Giang A Day	Male	Thai		Yes	Amo Green Agriculture Coop	Coop Director	Cattle
Vi Van Hoai	Male	Thai	-	Yes	Chieng Chung	Collector	Cattle
Lo Van Tuan	Male	Thai	-	Yes	Chieng Chung	Collector	Cattle
Hoang Van Tham	Male	Kinh		Yes	Muong Chanh	Butcher	Cattle
Ha Van Loa	Male	Thai	42	Yes	Oil village	Collector	Cattle (goat), pig
Le Van Vu	Male	Kinh	54	Yes	Hat Lot	Processor	Dried meat
Lo Thi Chung	Female	Thai	35	Yes	Chieng Chung	Butcher, retail	Pig (black & white)
Lo Van Xuan	Male	Thai	40	Yes	Oil village	Collector	Pig, cattle (goat)
Nguyen Thi Dung	Female	Kinh	42	Yes	Co Noi market	Butcher, retail	Pork
Doan Thanh Phuong	Female	Kinh	38	Yes	Hat Lot market	Retailer	Pork
Ha Van Lao	Male	Thai		Yes	Mon village	Retailer	Pork
Huong Lien	Female	Thai		Yes	Mon village	Retailer	Pork
Tran Thi Nhu Trang	Female	Kinh	33	Yes	Hat Lot market	Retailer	Pork
Vu Van Tinh	Male	Kinh	44	Yes	Co Noi market	Butcher	Pork
Nguyen Co	Male	Kinh		Yes	Nghiu Ten village	Retailer	Pork
Nguyen Duy Tai	Male	Kinh		Yes	Nghiu Ten village	Retailer	Pork
Do Thi Hai	Female	Kinh	45	Yes	Co Noi market	Butcher, retail	Pork (Indi)
Lo Thi Thu	Female	Thai	36	Support	Chieng Luong	Vet staff	
Cam Van Huoi	Male	Thai	54	Support	Chieng Luong	Extension staff	

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