

Draft



ACIAR Project Report 03

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Cattle Market Chain in South-East of Cambodia



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## Abstract

The Cambodian livestock sub-sector contributes about 4% of the national economy. In 2012 about 3.4 million cattle were mostly kept by smallholder farmers (MAFF 2013). Cattle population has declined in recent years due to the increasing use of mechanization in land preparation and local transportation, thus making draught animals redundant.

This paper is the first step in describing the market chain for cattle production in Cambodia, the present roles of the various stakeholders and provides some insights into the social, institutional and economic incentives that have led to the present market structure. The ultimate aim is improving smallholder access to the market and improving consumer access to a more consistent, high quality beef product.

Most smallholder farmers who own cattle in Cambodia have limited access to domestic and export markets which are increasingly demanding high and consistent quantity and quality beef. The market access is constrained by a number of factors includes growing requirements for local and international biosecurity, lack of market information and lack of capability to produce the required quality and quantity of cattle. Recent improvements in biosecurity practices and feeding technologies raise the prospect of converting traditional cattle raising for draught power to breeding and fattening cattle for market (Reference ACIAR proceedings 138).

This report investigates the current state of the cattle market chain, including smallholder farmers. It uses a strengths, weaknesses, opportunities and threats (SWOT) analysis. The aim was to determine key factors that affect the current state of the smallholder cattle industry, and identify and direct attention to the most important factors. Key factors identified include growing forages to target feed cattle, controlling endemic diseases, improving cattle production and reduce cattle health risk and responding to the demand from local traders for good cattle body condition and high quality meat.

MAFF statistical data shows that Cambodia cattle production has been decreasing from 2009 until 2012 (MAFF 2013). The total number of cattle produced decreased about 203,000 head (5.7%) compared to 2009 (see table 1). One main reason for the decrease was agricultural mechanization in land preparation and local transportation, thus making draught animals redundant (MAFF statistic data 2013). Feeding and labor for raising the cattle are an issue for farmers according to end line survey of ACIAR project in 2011 and farmer survey in 2013 of ACIAR project AH/2010/046. The majority of farmers had difficulty finding wild forage to feed their cattle and suffered shortages of labor to tend cattle as well.

The availability of communal free land for villager cattle grazing was decreased because communal land has been converted for other cropping. Having cattle also reduces farmer's availability for off farm work due to the labour requirement of cattle tending.

## Introduction

Cattle productivity in Cambodia is limited by a number of factors, including poor feed quality and animal health practices. With a growing demand for meat in domestic markets and export markets in Vietnam, there is an opportunity for smallholder farmers to meet this demand and help reduce rural poverty. ACIAR Project AH/2010/046 – *Domestic and international market development for high-value cattle and beef in South-East Cambodia* aims to assist smallholder cattle producers in Cambodia to be rewarded for producing better quality cattle for market. The project will assist smallholders to improve production and biosecurity and through marketing of a branded beef product assist farmers, traders, wholesalers and retailers along the market chain to improve profitability and therefore farmer livelihoods. The project aims to assist smallholders, traders and wholesalers along the market chain to increase market profitability and improve farmer livelihoods.

This will require a change in the traditional methods of rearing cattle so that cattle are produced for market rather than for draught and transportation. This will require innovations in feeding and tending, biosecurity and health measures and marketing.

This report investigates the current state of the cattle market chain, including smallholder farmers. It uses a strengths, weaknesses, opportunities and threats (SWOT) analysis. The aim was to determine key factors that affect the current state of the smallholder cattle industry, and identify and direct attention to the most important factors in cattle markets in Cambodia. Key factors identified include growing forages to target feed cattle, controlling endemic diseases, improving cattle production and reduce cattle health risk and responding to the demand from local traders for good cattle body condition and high quality meat.

Cattle production in Cambodia is dominated by smallholder farmers who have limited access to domestic and export markets which are increasingly demanding high and consistent quantity and quality beef. The main purpose for raising cattle has traditionally been for draught power in agriculture activity rather than market oriented beef production. The Cambodian Strategy for Livestock Production (2011) seeks to improve market participation as well as reducing risks of disease. The development of sustainable market chains ensures that all stakeholders in the market chain have economic incentives to work with smallholder's farmer to improve cattle production, cattle marketing and biosecurity, therefore increasing the income and productivity of farmers. Description of the cattle market chain will assist in understanding the cattle flow activities from cattle production to final consumers.

## **Methodology**

The study was based on structured interviews, focus-group discussions, and interviews with key farmers and trader informants in two provinces. Small groups of cattle traders used discussion tools to understand the current cattle trading situation. The groups of traders were from Kampong Cham, Pursat, and Phnom Penh city. Six key farmers were interviewed from Kampong Cham and Pursat.

The collected data was cross-checked with different sources for accuracy and validity. These included the use of the secondary data sources and different actors along the market chain to track the whole value chain.

The following steps were used to ensure assistance from provincial authorities and to find key traders and farmers for interview:

1. The Research team worked with DAHP technical staff on the research plan. The team requested DAHP to provide an official permission letter to carry out the field activities in the target provinces. Team requested DAHP to inform the Provincial Office of Animal Health and Production (POAHP) to provide all necessary support and assistance including field preparation.
2. Research team worked with POAHP in each province to identify key traders for the interview. Key Traders were determined by the volume of animals and cross-border trade. When this information was not adequate, the team sought expert opinion from officials of the District Office of Animal Health and Production, slaughter houses, and known key traders that have been appointed by provincial veterinary officials.

## **The changing cattle industry in Cambodia**

### **Cattle production trends**

Small household farmers dominate cattle production and play an important role in agricultural sectors. Livestock contribute approximately 15% of total agricultural production. In the past, cattle were used for draught power rather than for market. Due to mechanisation and lack of labour and off farm work is generating more income than raised cattle, and the using of draught power has declined about more than 60% of household. Currently, there are about less than 40% are still used cattle as main draught power in land preparation. In 2009, Cambodia cattle numbered 3.58 million head, dropping to 3.38 million head

in 2012 (Table 1). An average Cambodian smallholder farmer raises between 2-10 head per household, and as yet no large commercial cattle farms exist.

Most smallholder farmers who own cattle in Cambodia have limited access to domestic and export markets which are increasingly demanding high and consistent quantity and quality beef. The market access is constrained by a number of factors includes growing requirements for local and international biosecurity, lack of market information and lack of capability to produce the required quality and quantity of cattle. Recent improvements in biosecurity practices and feeding technologies raise the prospect of converting traditional cattle raising for draught power to breeding and fattening cattle for market (Reference ACIAR proceedings 138).

**Table 1. Cattle and buffalo numbers, Cambodia 2002-2012 ('000 head)**

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cattle	2,985	3,040	3,184	3,345	3,368	3,458	3,580	3,485	3,407	3,377
Buffalo	660	651	677	724	773	746	740	702	609	657
Total	3,645	3,691	3,861	4,069	4,141	4,204	4,320	4,187	4,016	4,034

Source: MAFF 2013

The recent decline in the cattle population since 2009 is thought to be due to an increase in the use agricultural machinery replacing the use of cattle for draught power and a shortage of labor for small household families to take care of cattle. For example, in the NW Cambodia provinces of Battambang and Pailin where more upland crops are grown, farms are larger and machinery more prevalent and only 20% of households now keep cattle (NW project report). In contrast, in SE provinces cattle are still kept in approximately 55% of households, it was dropped from 70% from last 3 years. The shortage of labor for tending cattle is due to migration of younger household members to urban areas and neighboring countries looking for job opportunities, resulting in farmers having difficulty collecting forage for their cattle.

The cattle traded have also changed in the past 5 years indicating a shift to production rather than use of draught animals. The majority of cattle sold in 2013 (70%) were male and younger than 5 years old, compared to 30% 5 years ago. The change in female cattle sales is less dramatic with the proportion of young female cattle <5 years old increasing 10% compared to 5 years ago (Table 2).

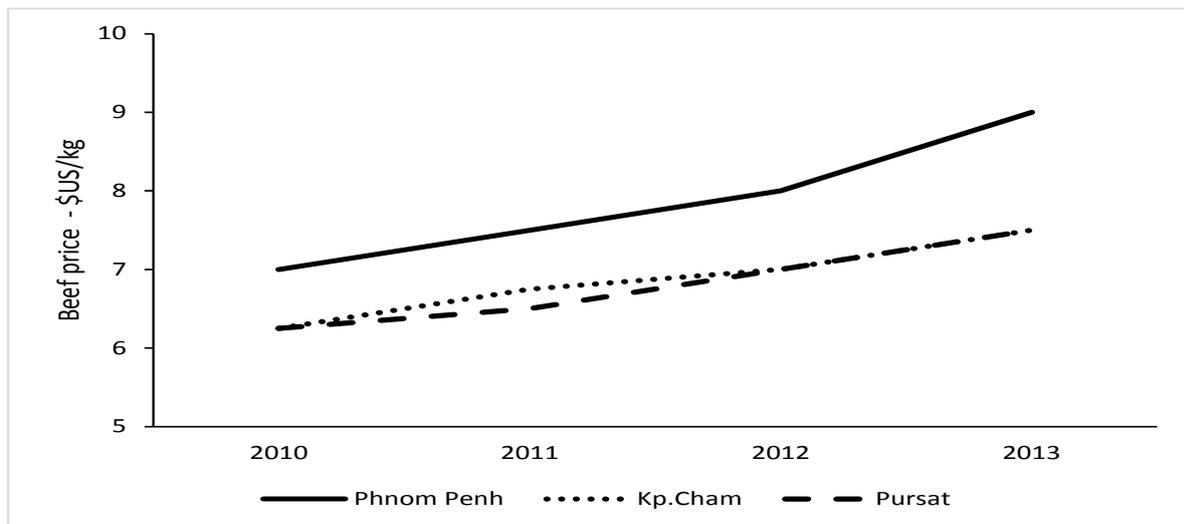
**Table 2. The changing age of cattle traded in Cambodia 2008-13**

Ages	> 10 years	5-10 Years	< 5 years
<b>Cattle traded in 2013</b>			
Male	10%	20%	70%
Female	20%	30%	50%
<b>Cattle traded 5 years ago</b>			
Male	25%	45%	30%
Female	20%	20%	60%

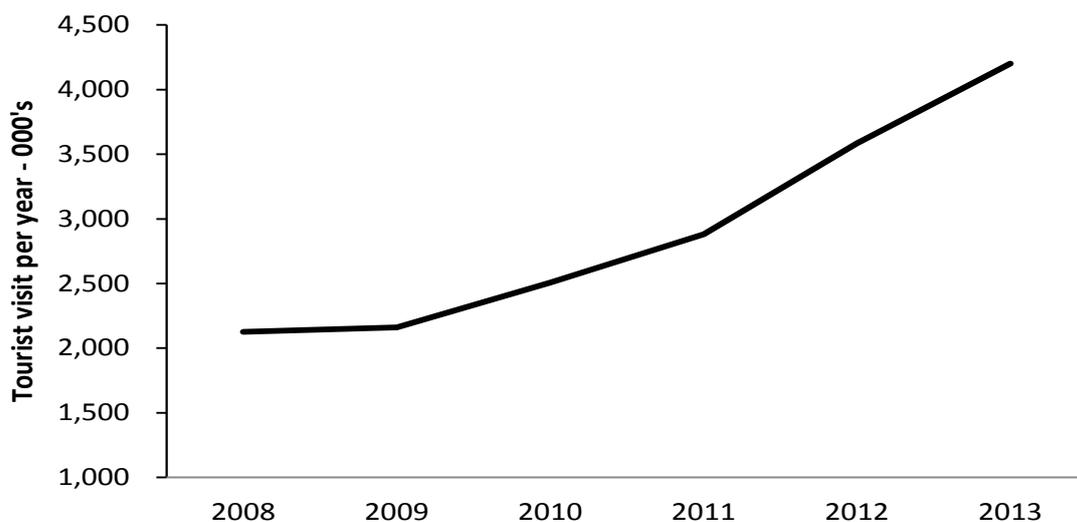
## Changing demand for beef within Cambodia

Estimates provided by traders indicate that during the low season (June to November) Phnom Penh markets need about 800 head per day, and 1,000 head per day for high season (December to May). Higher demand for beef in December through to May is due to the higher number of weddings that occur during this time (the traditional Cambodian wedding season), and the number of traditional festivals that take place after harvest. However, demand for beef in provincial markets like Kampong Cham and Pursat is still low. Demand for beef at Kampong Cham provincial town market is about 4 head per day and Pursat about 3 heads per day. The lower demand is because the beef price is higher than other meat and local markets cannot compete with large city markets with high tourist demand such as Phnom Penh and Siem Reap. The increased demand and decreased population has resulted in increasing beef prices. Average beef price has increased around 10% per year during 2010-2013 (Figure X).

**Figure 1 Beef market price in Phnom Penh 2010 -2013 (Riel)**



Based on Ministry of Tourist statistic data shown that Cambodia has received 4.2 million visitors in 2013 was increased about 16%, compared to 2012 and this year 2014, Cambodia expected to have about 4.5 million visitors. The figure 3 is number of visitors' trend who visited in Cambodia in last 6 years (2008-2013). Most of foreign visitors are visit Phnom Penh city and follow Siem Reap province.



**Figure 2. Number of tourists visiting Cambodia. (Source: MOT 2013)**

## **Changing demand for cattle from Cambodia for Vietnam market**

Traders in Banteay Meanchey province indicated there were about 20 companies importing cattle from Thailand and exporting to Vietnam by transit through Cambodia during 2008-2011 due to high market demand in Vietnam. However, this has since declined to now only 3 companies since late 2012. The number of cattle has decreased about 80% due to high prices in Thailand and Myanmar as well as higher prices and formal and informal fee charges within Cambodia.

The decreased number of cattle imported from Thailand and exported to Vietnam markets is due to increased cattle prices in Thailand, Malaysia and Myanmar. These countries are the main sources of cattle for export to Vietnam by transit through Cambodia. Vietnamese cattle trader's partners in Thailand have difficulty finding cattle due to high prices and also the reduced numbers of cattle within Cambodia. Vietnam has also increased imports of cattle from Thailand through Laos and more recently from other countries such as India and Australia.

Cattle traders in Phnom Penh, Kampong Cham and Pursat province indicated that Vietnamese market demand for Cambodian cattle has continued to increase year to year, although has slowed recently. One of the largest exporters said that in the past 5 years they have exported more than 20,000 head per year, but 2013 was only around 5,000 head. There are no official statistics of cattle export to Vietnam through Cambodia, when asked about cattle export data PDAH indicated it was not recorded, including the depot at the Vietnam border.

Based on South East Asian Livestock Services (SEALS in April 2014) report, Vietnam has imported over 68,000 heads of Australian cattle, which is a huge increase on the previous year when it imported just under 3,500 head, Vietnam also has imported live cattle from India according to Vietnam Department of Agriculture reports in 2012 but no official data was given. However, Nguyen Dang Vang, president of the Vietnam Husbandry Association told Vietnam Business Time on September 2014 that the first 6 months of 2014 Vietnam has imports 72,000 of live cattle from Australia and expected it would reach about 150,000 heads by the end of this year. The increasing import of Australian beef was because cattle providers in Laos and Cambodia have been declined and Vietnam market demand was increased.

## **Cattle production in South-East region**

Agricultural production varies between regions in Cambodia. For example, rice production is the main activity for farmers in the South-East region, while the North-West region has both rice production and upland cash crops as major activities. Also, the trend to agricultural mechanization in the South-East was lower than in North -West region. Based on the household survey of the South-East, the cattle population in the South-East region is much higher than North-West. The average number of cattle per household in Kampong Cham and Pursat provinces are slightly different; Pursat province averages 6-7 head per household, while Kampong Cham province 5-6. In 2012, the cattle population in Kampong Cham and Pursat provinces decreased about 6.4% compared to 2011 (Table 2). Of the total, approximately one quarter are used for draught power.

**Table 3. Cattle population characteristics in Pursat and Kampong Cham provinces 2012 ('000s head)**

	<3 years old		>3years old		total	Draught power
	Male	Female	Male	Female		
Kampong Cham	114	111	75	77	377	114
Pursat	23	25	21	22	91	23
<b>Total</b>	<b>137</b>	<b>137</b>	<b>96</b>	<b>99</b>	<b>468</b>	<b>137</b>

Source: The Department of Animal Production and Health, Phnom Penh, Cambodia (2012)

### Cattle feeding systems

There are three types of feeding management that are practiced: tethering in the field, herding, and free grazing during the day.

- November to April (dry season): In Kampong Cham, approximately one third of farmers each use free grazing in the rice field during the day, tethering and herding cattle. In Pursat, the trend is similar, although there is a stronger emphasis on tethering.
- May to July (wet season): Approximately half the farmers in both provinces use the tethering method and herding cattle in the field is still used by up to a quarter of the farmers. There are also a small percentage of farmers who cut and carry native grass to their cattle during the wet season.

The feeds that are most popular are similar across the whole year, including rice straw and native grass; however the percentage of farmers who are using these two types of feed varies with province and period. Rice straw is used more by farmers in South –East region of Cambodia such as Kampong Cham, Prey Veng, Svay Rieng and Takeo provinces during the dry season (Nov-Apr), while its use decreases in the wet season. In Pursat province, rice straw is less commonly used. Even in the dry season when availability is highest only around 40% of farmers use rice straw. Instead there is a greater use of native grass in both the dry season and the wet season.

### Cattle breeding

Local breeds (small yellow cattle) are common in the provinces such as Battambang, Pursat, Bantea Meanchey, Svay Rieng and Kampong Chhnang. They are adapted to specific climatic conditions such as heat, mountainous terrain or drought. However, cross-breeds (local with Haryana or Brahman breeds) are common and more popular among farmers who raise cattle in Kampong Cham, Kandal and other provinces, especially provinces along the Mekong River.

Baseline surveys in project areas showed there are about 80% local breeds, 19% crossbred and 1% Haryana. There was no Brahman breed and about 71% of the herd is female. However, 75% of the small number of Haryana is male which suggests that Haryana bulls are sought after for breeding purposes. The predominance of the local breed is possibly due to a lack of breeding activities in Cambodia such as artificial insemination and breeding stock selection. However, local breeds also receive a higher price which is a disincentive for Cambodian farmers to consider breeding.

The average age of breeding cows is 4 years with 53% being pregnant at the time of the survey. There was no clear preference for calving time and only 15% of households attempted to have cows calve at a

particular time of the year. The average calving interval was 14 months which is shorter than other areas of Cambodia. This could be due to a combination of factors such as availability of feeding resources during lactation and breed of cow. In general, the local cow is in heat earlier than crossbred cows.

The majority of farmers used bulls for mating sourced from within the village and only a small number of farmers used bulls for mating from outside the village within the district. On average the mating service fee was US\$8 to \$10 per pregnant cow.

Artificial insemination is not popular among Cambodian farmers, the 3 years (2007-2010) program SLPP (Small Livestock Production Program) of FAO, funded by EU, took place in Pursat province but results after the project was finished have not been encouraging until now.

### **Biosecurity control and prevention**

Cattle production in Cambodia is limited by many endemic diseases including foot-and-mouth disease (FMD), haemorrhagic septicaemia (HS), and blackleg. Parasites such as *Fasciola gigantica* and potentially *Toxocara vitulorum* also have a significant impact on health and therefore farmers income. Poor nutrition and knowledge of cattle husbandry and breeding management are likely further factors limiting production (Windsor 2008).

FMD is one of the most common diseases, in part because this fatal and endemic disease is not easy to diagnose until the symptoms are very advanced. Vaccination is sometimes provided or subsidized by the Department of Animal Health and Production (DAHP) Services twice a year, however the service is sometimes unavailable, creating weaknesses in the animal health system. In addition to FMD, wildlife represents a significant problem. Predators usually attack cattle during grazing in communal areas, plus during this time cattle come into contact with water buffalos and contract FMD. Water buffalos carry the disease but are not as severely affected as cattle.

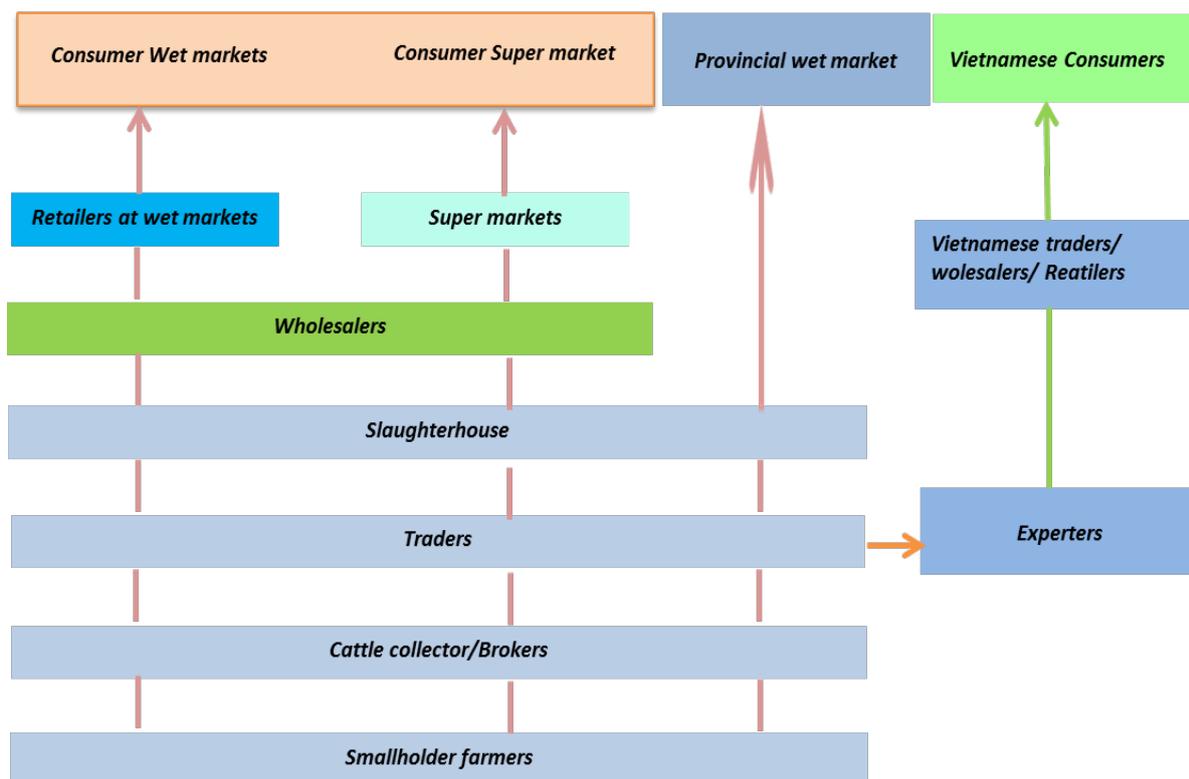
Based on group meetings and discussion with farmers and traders, most farmers do not have a vaccination program for their cattle to prevent disease. Vaccination is available under a government program and some NGO projects but it does not happen regularly. This may be due to poor understanding of the full cost of an outbreak, the efficacy of vaccination or unavailable income for vaccination.

To improve biosecurity farmers need greater knowledge on forage production technology, large ruminant nutrition, husbandry, reproduction, infectious disease and parasite management. Vaccination for HS and FMD are required every six months.

### **Cattle/Beef market chain description**

Cattle production in Cambodia is dominated by smallholder farmers who have limited access to domestic and export markets which are increasingly demanding high and consistent quantity and quality beef. The main purpose for raising cattle has traditionally been for draught power in agriculture activity rather than market oriented beef production. The Cambodian Strategy for Livestock Production (2011) seeks to improve market participation as well as reducing risks of disease. The development of sustainable market chains ensures that all stakeholders in the market chain have economic incentives to work with smallholder's farmer to improve cattle production, cattle marketing and biosecurity, therefore increasing the income and productivity of farmers. Description of the cattle market chain will assist in understanding the cattle flow activities from cattle production to final consumers.

The market chains operating in provincial markets are different to the Phnom Penh market. In Phnom Penh markets beef comes through all stages of the market chain from smallholder farmers, collectors, traders, slaughterhouse, wholesalers, retailers and final consumer. In contrast, the provincial markets are missing the wholesaler stage because after slaughtering beef goes directly to retailers and final consumers. In these situations traders are also retailers (Figure 3). This is due to market size.



**Figure 3. The beef market chain map in Cambodia**

## **Cattle market chain stakeholders**

### ***Traders***

Cattle traders can be divided into 4 different levels as follows:

- Village cattle collector or broker: Collectors travel from village to village to buy cattle but only trade in small numbers of cattle per year due to limited capital and limited access to area in village, commune and district.
- Small traders who trade in limited amount of cattle by connecting with collectors at the village level.
- Inter-provincial traders who trade in large numbers, buying cattle and with linkages to small traders in several provinces.
- Large traders who trade in large numbers of cattle and may be involved in exports.

### ***Collectors***

Cattle collectors are based in a village and travel between villages when they get information that villagers intend to sell. Cattle collectors have close relationships to farmers compared to other traders because they live in villages. The collectors have limited capital to buy cattle, but use their own money to buy cattle and re-sell to small traders. Profit is based on their knowledge in buying cattle from farmers. Collectors buy from 1 to 5 cattle per month and pay cash to farmers.

### ***Small traders***

A small cattle trader buys and sells between 15-20 cattle per month and most of them are based at commune level (CIAT 2009). Some trade up to 60 head per month and undertake these activities at a broader district level. Small traders travel between districts and have networks with the cattle collector at village level to collect the cattle throughout villages. Normally each small cattle trader deals with 5 to 10 cattle collectors. Small traders also trade within their commune or district.

Small traders are required to have a cattle transport permit from the District Office of Animal Health and Production (DOAHP) for cattle trading within districts. However, in practice, small traders don't have cattle trading permit. They have a letter issued by the village chief and commune leader certifying that the animal was bought from farmers in their village and commune, and a letter from village animal health worker certifying that the animal is healthy and disease free. Small traders pay in cash to collectors after reaching agreement to buy cattle.

### ***Inter-provincial traders***

The inter-provincial traders are also required to be licensed from DAHP to trade cattle across a provincial border or transport cattle to Phnom Penh or other province within the country. They have good networks of 5-10 small traders throughout districts but occasionally they buy cattle directly from collectors. On average inter-provincial traders trade 60-100 head per month with an average about between 720 to 1,000 head per year. Transport of cattle to Phnom Penh is arranged after they have collected enough cattle. Transport fees range from \$12-25/head from province to Phnom Penh depending on the distance. The inter-provincial traders must apply the license to POAHP (Provincial Dept. of Animal Health and Production) to buy cattle, and transport permit for crossing the province.

### ***Large traders***

Large cattle traders turn over more than 2,000 head per year either within the province and inter-provincial or cross-border using their own capital. There are between 10 to 20 large cattle traders in each province depending on the size and population of the province and the cattle production. Large traders have good trading networks with small traders in the province. They are in direct contact with inter-provincial traders. The largest traders in Pursat and Kampong Cham have about 20 small traders as partners, buying and collecting the cattle at the village level.

Large traders are required to apply for a quarterly license from Ministry of Agriculture, Forestry and Fisheries (MAFF) to trade cattle between provinces. The license limits trading to a maximum quota of 1,000 cattle/buffaloes per quarter.

### ***Slaughterhouse***

Slaughterhouses provide a service to traders for slaughtering their cattle on a fee per service basis. Service fees in Phnom Penh were 20,000 Riels (US\$5) per head. There are two large slaughterhouses in Phnom Penh (Boeng Salang and Chroy ChangVa) and 4 smaller slaughterhouses. Chroy Chang Va processes around 300 cattle per day during the low season and up to 400 per day in peak season.

Boeng Salang slaughterhouse averages 120 head per day in the low season and around 150 head during the high season. Usually the slaughterhouses begin their activities at 2 am, with around 20 to 30 traders using each slaughterhouse.

Cattle are slaughtered in traditional ways using simple tools such as knives and axes, no modern equipment is used. Floors are concrete and tile. There is no weighing of cattle before slaughtering but meat is weighed before distribution to wholesalers.

A veterinarian is present at the slaughterhouse to inspect cattle before slaughtering and marking a stamp on beef after slaughtering with a certificate to the beef quality and ensure that the meat is safe for consumption. The slaughterhouse is licensed by DAHP if in Phnom Penh and by PDAHP if in a province.

Provincial slaughterhouse charges are between 10,000 to 15,000 riels per head (\$2.50 to 3.75/head), provincial veterinarian charges 3,000 riels per head (\$0.75) and tax is 3,500 riels per head (\$0.87). Poor hygiene and arrangement at provincial slaughterhouses are a big concern for cattle traders. Some slaughterhouse does not have any waste drainage systems and lack of water for cleaning. Most traders complain about hygiene and poor services provided.

### ***Wholesalers***

Wholesalers only operate in Phnom Penh. Wholesalers purchase the whole carcass from the trader after slaughtering and manage their own cutting and grading of meat quality for different clients requirements and markets. For example, supermarkets require about 5kg per piece and wet market about 20 kg. They then further process the beef for their customers' requirements. The wholesaler distributes to traditional market, restaurant and super market at the early morning.

Wholesalers sell meat to retailers at the wet market on 1 to 2 days payment. Supermarkets, restaurants and hotels get credit for 2 weeks to 1 month without charging interest because supermarkets and restaurants pay higher prices than retailers at wet markets. The wholesaler pays the trader on a daily basis on the evening of the same day, even if they have a long standing business relationship. The traders will not supply meat the next day if wholesalers do not pay on the same day.

### ***Retailers and restaurants***

Retailers and restaurants in Phnom Penh receive the beef from wholesalers each morning. Retailers further process beef to 4 or 5 different quality cuts for local consumers demand. Restaurants normally only require high quality beef. There are two types of retail outlets in Phnom Penh, wet markets and supermarkets. Supermarkets still only command a very small market share compared to wet markets and restaurants. Retailers in provinces are supplied directly from traders at the slaughterhouse and sometimes small traders are also retailers as well.

### ***Cattle depots at the Vietnam border***

The border depots provide a service to exporters and charge about 10,000 riels per head (\$2.5/head) for holding the cattle before export to Vietnam. Cattle are usually kept only 1-2 days and sometimes only a few hours, although this can extend if price negotiations are difficult. Traders arrange their own cattle feed if the cattle are kept for a longer time.

There are three main depots for export to Vietnam:

1. Trapang Thlong on the border of Kampong Cham province and Tai Ninh province of Vietnam.
2. Phnom Den on the border of Takeo province and An Giang province of Vietnam.
3. Banteay Meas on the border of Kampot and Kieng Giang province of Vietnam.

Disease control and prevention at the border depots is poor and there is a high risk of disease outbreak including local cattle around depot areas. Traders indicated that cattle from Thailand sometimes have FMD disease. There are no prevention measures when imported cattle develop disease at the borders depot such as isolation. Traders indicated they keep sick cattle for a few days to administer treatment before export to Vietnam. Sick cattle needed to be kept at the depot for several days before export to Vietnam otherwise the Vietnamese traders offered low price.

## **Cattle movement through the market chain**

Cambodian cattle are transported directly from the village producers to another village for continued raising or to a provincial slaughterhouse, Phnom Penh slaughterhouse or a depot at Cambodia-Vietnam border for export. Normally, traders transport cattle from the point of origin to market destination. Cattle movement is generally related to cattle quality and animal condition and therefore price. Cattle exported to Vietnam are generally good condition animals, followed by Phnom Penh. Provincial slaughterhouses take the lowest quality, including injured and diseased animals. When the farmers buy cattle for raising they select only good breeding, good condition, young cattle.

## **Cattle movement within the country**

The proportion of cattle within the two study provinces moving to each market destination was very similar. However for export and to the Phnom Penh market transport is usually arranged independently.

### ***Kampong Cham***

There are an estimated 20 large cattle traders operating in Kampong Cham province. The number has dropped from around 30 large traders compared to five years ago due to the cattle business slow down, lower profit margins and the difficulty in sourcing cattle. The majority of large traders are based within the province. There are between 70 to 80 small traders, and some also slaughter for local markets. One significant change over the last five years is that there are no longer any brokers who buy cattle for traders for a commission. Collectors now buy cattle with their own money and sell to traders.

Traders estimated there were about 85,000 live cattle traded within Kampong Cham province in 2013, dropping from 119,000 head 2 years previously (calculations based on an estimated 17 districts @ 5,000head/year). The distribution of cattle traded in 2013 in Kampong Cham is presented in Figure 4.

- 15% slaughtered and consumed within province,
- About 10% on sold to farmers for breeding,
- 30% exported to Vietnam through Cambodia traders,
- 20% sold directly to Vietnamese traders operating under a Cambodian company within the province, and
- 25% sold to Phnom Penh markets.

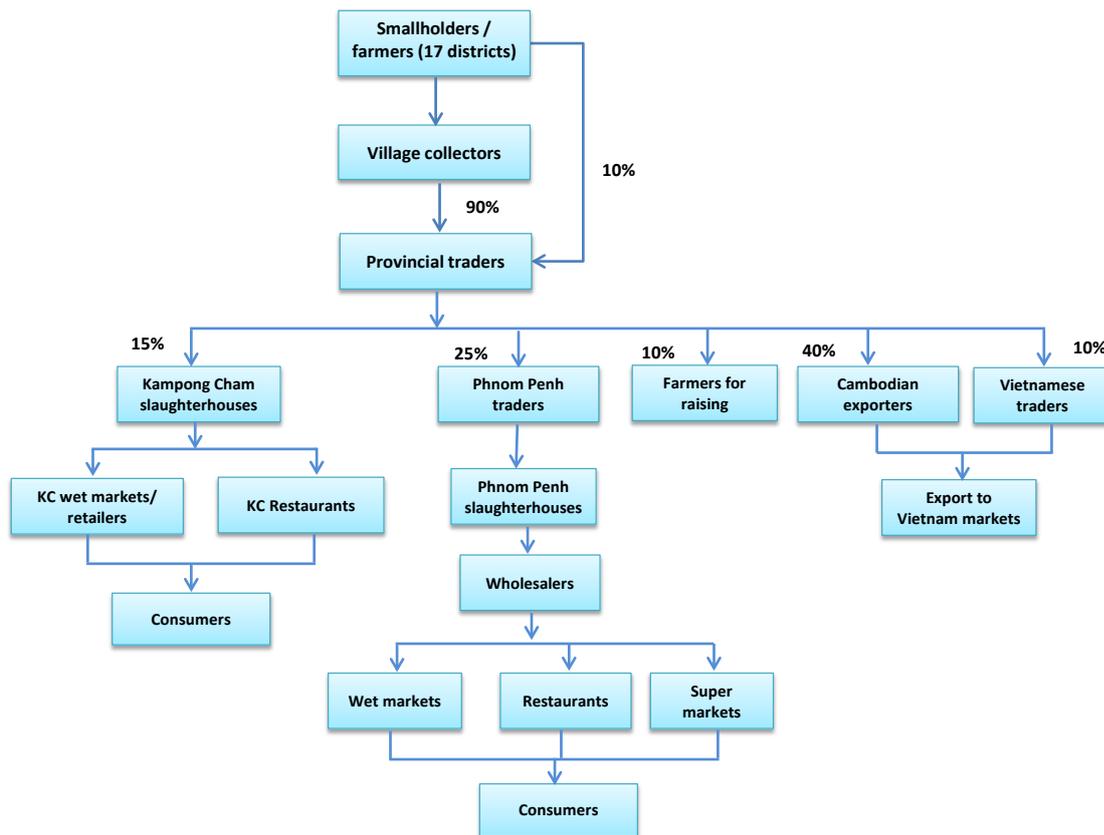


Figure 4: Cattle market chain in Kampong Cham province, Cambodia 2013

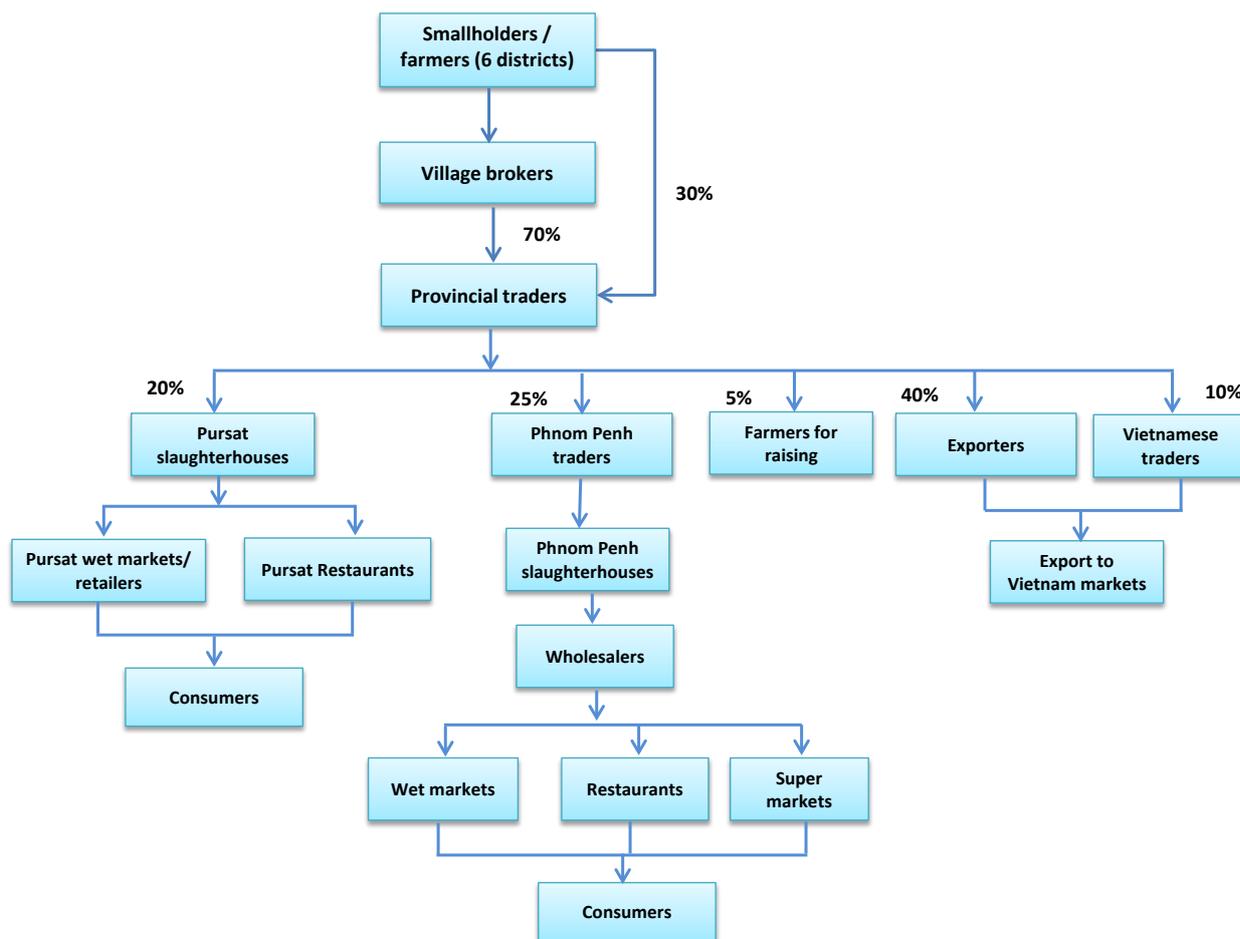
#### ***Pursat cattle movement***

POAHP staff reported that there are 6 large cattle traders operating in Pursat province, two of which come from another province. The market chain and distribution is very similar to Kampong Cham province. There are also no brokers, but instead of them they have the collectors who buy the cattle by using their own money.

The traders estimated that the number of cattle traded in Pursat province has decreased about 25% compared to 3 years ago. In 2013, about 10,200 head were traded in Pursat, down from 13,260 head 3 years ago. (Calculation based on 6 districts @ 1,700 heads/ year).

The distribution of cattle traded in Pursat in 2013 is presented in Figure 5:

- **20% slaughtered and consumed within the province,**
- 30 % exported to Vietnam through Cambodia traders
- 20% was sold directly to Vietnamese traders operating in Pursat under a Cambodian company name,
- 25% to traders in Phnom Penh for Phnom Penh markets, and
- About 5% on sold to farmers for breeding

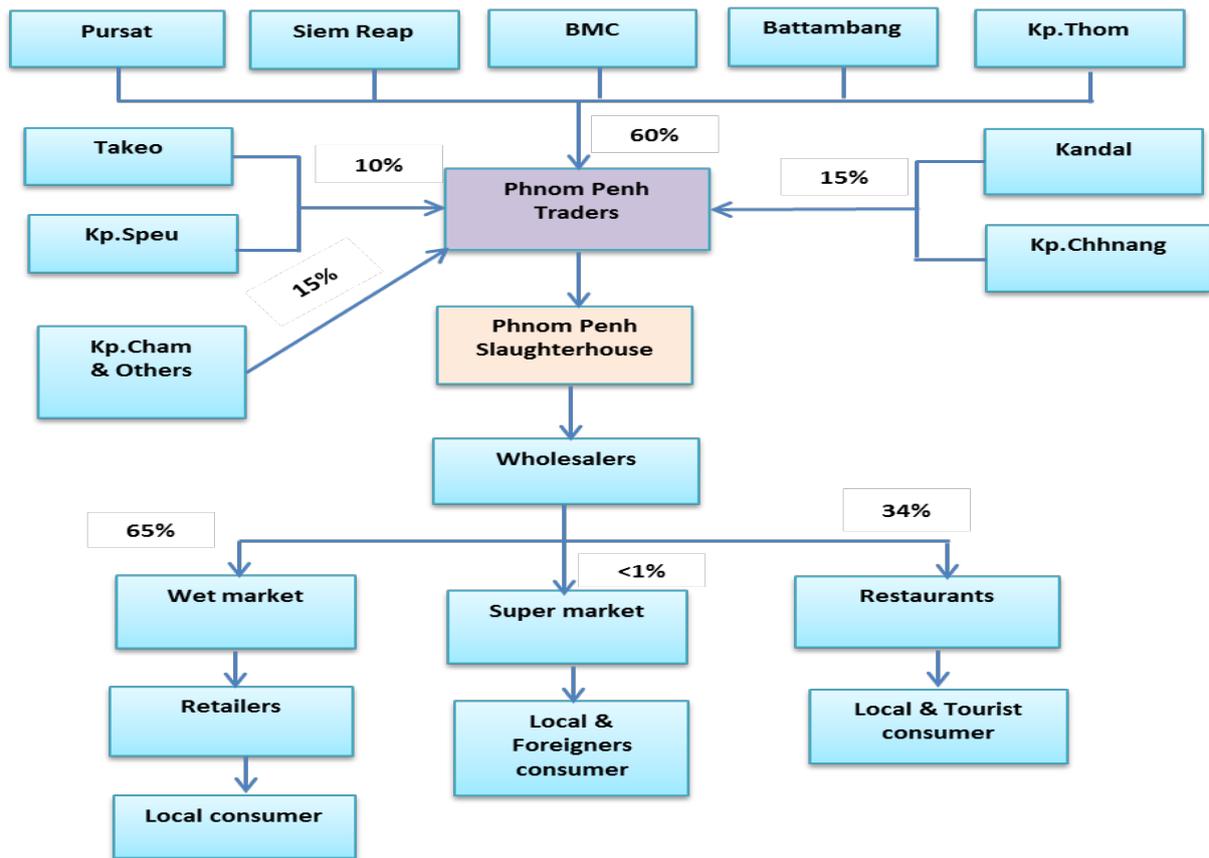


**Figure 5: Cattle market chain map in Pursat province, Cambodia 2013**

***Sources and distribution of cattle into Phnom Penh markets***

Traders in Phnom Penh estimated approximately 60 % of cattle supplied to Phnom Penh markets originated in the northwest provinces of: Pursat, Siem Reap, Banteay Meanchey, Battambang and Kampong Thom (Figure 6).

Kandal and Kampong Chhnang provinces supplied 15% of cattle into Phnom Penh, Takeo and Kampong Speu provinces about 10%, Kmapong Cham and others provinces 15%.



**Figure 6: Cattle market chain map in Phnom Penh markets 2013**

In Phnom Penh, there are three main retail outlet types; wet market, restaurant and super market. The traditional wet market still dominates beef sales at 65%, restaurants account for about 34% and super markets are less than 1% (Figure 6).

#### **International movement of cattle**

Cattle from Thailand have transited through Cambodia to Vietnam since 2009. Based on discussions with traders and DAHP officials there are several import routes from Thailand through Banteay Meanchey, Oddar Meanchey and Battambang provinces. In 2009 there were approximately 20 companies exporting up to 150,000 cattle per year into Vietnam. Traders estimated that from 2010-2012, cattle imported from Thailand for export to Vietnam via Cambodia was about 1,000- 1,500 head per week through Banteay Meanchey province and 500-700 heads per week through Battambang province. However, this has dropped dramatically to about 150 head per week in Banteay Meanchey province and about 100 head through Battambang during 2013. This equates to a decrease from 110,000 head per year to about 13,000 head since late 2012. There are three remaining companies exporting: Yovah Panich Co.Ltd, Peahanak Peanich Co. Ltd and Cheat Apiwat Co. Ltd.

Normally, transit through Cambodia takes about 1 day from the Thai border to Vietnam border depot in the south-eastern Cambodian provinces of Kampot, Takeo, Svay Rieng and Kampong Cham. Cross-border movement of Cambodia cattle export to Vietnam is obtained (purchased) by small traders through linkage to large traders who hold an export certificate and license obtained from the DAHP.

Imported cattle from Thailand transiting through Cambodia change truck at the Thai border before continuing to the Vietnam border. Many of these cattle originate in Malaysia and Myanmar. Most cattle

exports to Vietnam through Cambodia take place in villages in the vicinity of the border. Large numbers of cattle are exported to Vietnam through depots at the Cambodia-Vietnam border organized or trade facilitated by small Cambodian trading companies. The cattle stop at the depot Vietnam-Cambodia border before export to Vietnam. Cattle exporters and traders at the border indicated that most cattle exports to Vietnam are unofficial and cattle cross the border to Vietnam by arrangement with small groups of local residents. This is because if cattle are exported to Vietnam by official channels the traders are required to have a lot of documents including animal quarantine certificate and other complicated paper and this takes time.

## **Pricing of market chain analysis**

The market chain price analysis aims to estimate the earnings of all stakeholders in the cattle and beef market, from farmers through to retailers. This analysis is based on information provided during meetings and discussions with traders, wholesalers and retailers and also both wet market and supermarket visits.

Cattle production costs are difficult to estimate as the majority of cattle are raised by small household farmers. Family members are the main labour source for raising cattle in traditional methods such as free grazing and cut and carry. A very small percentage of cattle producers purchase feed. Cattle prices depend on size, breed and condition. Traders generally agreed that cattle weight was underestimated as cattle are not weighed but sold by visual estimate. Cambodian local cattle generally weigh 250 to 300kg and the price ranges from US\$650 to \$800/head.

On average, cattle collectors make a profit of between US\$12 to US\$25/head for live cattle purchased directly from the farmers. Small traders make profit of US\$20 to US\$25/head, although can make more if farmers lack knowledge of market price. Large traders expect a profit of over \$30 per head after deducting transportation and other costs. Phnom Penh traders make a profit of around US\$20 per head.

The profit for wholesalers in Phnom Penh was about US\$0.12/kg for supply to wet market and about US\$0.25 /kg for super markets and restaurants. The higher margin for supermarkets and restaurants covers the cost of around 3 weeks credit that is supplied. Phnom Penh wet market retailer margins are about US\$0.50/kg or up to US\$1/kg depended on quality of meat after grading. However they face weight losses due to lack of cool storage and evaporation of about 5%. Supermarket margins of approximately 8% equates to US\$1.50/kg. However, this margin includes packaging and cooler facility cost.

The below are cost analyses of stages in the cattle market chain from small household farmers Kampong Cham and Pursat provinces to markets and consumers in Phnom Penh.

### **Cost Analysis of market chain stakeholders.**

#### **1. Cost analysis for collectors level:**

- Purchase price of cattle from farmer : US\$728/head (live cattle weight about 280kg and average price 10,400Riel/kg US\$2.6/kg)
- Local authority letter (village, commune) expense: US\$3.75/head
- Total cost: US\$731.75/head
- Selling price: US\$746.75/head
- Profit: US\$15/head

## **2. Cost analysis for small traders level:**

- Purchase price of cattle from collectors : US\$746.75
- Informal expense at district level (District veterinary & local authority): US\$5/head
- Local transportation cost: US\$ 3.75/head
- Total cost: US\$755.50/head
- Selling price: US\$780.50/head
- Profit: US\$25/head

## **3. Cost analysis for large traders level:**

- Purchase price of cattle from collectors : US\$780.50/head
- Informal expense at provincial level (PDAHP & local authority): US\$10/head
- Transportation cost (Province to PP): US\$ 12/head
- Total cost: US\$802.50/head
- Selling price: US\$832.50/head
- Profit: US\$30/head

## **4. Cost analysis for Wholesalers level:**

- Purchase price of beef from traders in Phnom Penh : US\$8.25/kg
- Labor for meat cutting cost: US\$0.01/kg
- Delivery cost (local transportation): US\$ 0.02/head
- Total cost: US\$8.28/kg
- Selling price: US\$8.40/kg
- Profit: US\$0.12/kg

## **5. Cost analysis for retailers at wet market level:**

- Purchase price of beef from wholesaler : US\$8.40/kg
- Losing weight cost (lose weight about 5% ): US\$ 0.42/kg
- Total cost: US\$8.82/kg
- Selling price: US\$9.75/kg
- Profit: US\$0.93/kg

**Table 2. Market chain pricing.**

<i>Stakeholders</i>		<i>Buy/sell</i>	<i>Prices</i>		<i>Profit</i>
			\$/head	\$/head	\$/head
Collector/broker	From farmer	buy		728.00	
		cost		3.75	
		sell	746.75		15.00
Small trader		buy		746.75	
		cost		5.00	
		cost		3.75	
		sell	780.50		25.00
Large trader		buy		780.50	
		cost		10.00	
		cost		12.00	
		sell	832.50		30.00
			<b>\$/kg</b>	<b>\$/kg</b>	<b>\$/kg</b>
Wholesaler		buy		8.25	
		cost		0.01	
		transport		0.02	
		sell	8.40		0.12
Wet market		buy		8.40	
		cost		0.42	
		sell	9.75		0.93

### **Credit issues in cattle production**

Commercial banks and micro finance institutions (MFIs) recently began lending to traders and farmers at the provincial level. However, commercial banks are focusing on real estate development rather than for improving rural businesses, and only micro finance Institutions are lending to farmers who want to expand the small business.

Commercial banks and MFIs that are available:

- ACLEDA Bank – this was originally a MFI that was upgraded to a commercial bank more than 5 years ago. It has an extensive branch network, and still maintains a micro-enterprise, poverty-based mission, despite now offering a full range of commercial services.
- ANZ Royal Bank – in many ways this is the market leader bank, especially in retail services, as it has access to substantial technical resources from its Australia-based parent. While it has no interest in

micro lending, it has been expanding its branch network into the provinces and is offering products that are designed to meet middle market needs. It specifically sees SMEs as a target market.

- Canada Bank and Cambodian Public Bank have been expanding their branch networks. While neither is regarded as a market leader, they are likely to follow and imitate new products being introduced to the market, thus providing some needed competition.
- AMRET – at present it operates in 13 of 24 provinces, although it is expanding its branch network countrywide. It has applied for a deposit license, and already has more than enough equity to qualify. It is interested in new lending for small business at the provincial levels.
- PRASAC – This MFI historically has the greatest number of clients, reached through group lending for farmers.
- other MFIs are available at the village level for farmer lending.

Even though the commercial banks and MFIs are available for traders and farmers for lending there are less than 20% of cattle traders that can access services at a lower interest rate because due to compliance with commercial bank requirements, and they can only access MFIs at high interest rates. Commercial banks require security in the form of a fixed asset such as land title or building asset which certified from local authority. This is the main obstacle for small traders and farmers because they have limited assets, especially farmers. Some farmers who worked with this ACIAR project (AH-2010-46), have taken short term loans from MFIs to buy the cattle for fattening (with interest rates 2% per month). MFIs play an important role in the cattle market providing credit that helps small traders and farmers improve their business and production techniques. Farmers can increase capacity by buying cattle for fattening.

### **Payment system in cattle trading**

There were two methods of payment between traders and farmers and traders to traders for cattle purchase. The method used depended on the relationship between traders and farmers. Normally, the traders pays cash to farmers when they buy cattle, however sometimes they pay 2 or 3 days later when they trust each other. This is common when the collectors or traders are from the same village as the farmers. The majority of large traders and small traders pay in cash at the point of sale. Large traders exporting to Vietnam sometimes sell on 3 to 4 days credit if they have a good relationship with Vietnamese traders.

### **Cattle Traders expectations**

Most traders in Kampong Cham, Pursat and Phnom Penh who participated in the meetings expected that the cattle business will be faced with more difficulty in next 5 years if the cattle population continues to decrease similar to the current situation. Many farmers have sold their cattle in recent years due to family labor issues and no more communal free land for villager grazing.

It is expected the number of small traders will decrease due to high competition and it will remain difficult to find cattle to buy due to the reduced production. Traders will abandon the cattle business looking for other opportunities. However, some traders pointed out that even though the current cattle price high and traders have difficulty sourcing cattle, the cattle business still represents a good opportunity because cattle are easy to sell. Some traders are planning to expand their business in future if they have sufficient capital as they see the cattle business as an opportunity to improve their family livelihoods.

Most traders expected that informal and formal fees and charges will decrease due to improve infrastructure for transportation and law enforcement will be improved, especially the informal fee charges along the road. They expected market price for beef to increase between 5 to 10% for the next 2 to 3 years.

## **Proposed response – ways forward**

The market demand for cattle in Cambodia has grown substantially resulting in market opportunities to develop cattle production to fill the domestic and export demand. Smallholder farmers who are the main cattle producers in Cambodia need better understanding on biosecurity and feed nutrition for better cattle production, raising cattle for market to improve profitability and therefore family income and livelihood. Small household farmers need to increase cattle quality and gain better access to Phnom Penh and export markets.

A recent study on change perceptions and adaptation in the cattle industry by our project team has found two main changes: 1) many farmers have sold their cattle due to increased agricultural mechanisation, but some farmers have shifted from raising cattle for draught power into market oriented production. This is not widespread but is a sign of change and; 2) farmers whose raise the cattle for market now have access to improved feeding and biosecurity techniques.

The findings are summarised in a SWOT format below (Table 4).

## **Conclusion**

Cattle production plays an important role for Cambodia farmers not only for draught power in land preparation for agricultural activities but also for rural transportation, income generation and beef production. However, cattle productivity is constrained by the lack of feed resources available for cattle and this problem has a prolonged impact on the reproductive performance of cattle.

Traditional feed is natural grasses and crop residues like rice straw during the dry season. Farmers have to travel increasingly long distances to cut wild grass for their cattle which is a major challenge as it requires high labor inputs. Cambodian farmers have limited knowledge of cattle feed nutrition, husbandry, reproduction, infectious disease, parasite management and biosecurity. Farmers do not have plans for vaccination of their cattle, and vaccination mostly only occurs through provision under Government or other projects.

Traders do not currently have a constant supply of good-quality cattle and a more formalized marketing system for domestic and export markets is needed. Farmers should improve knowledge on market oriented production to generate more income rather than just for draught power. Smallholder farmers and traders should consider the feasibility of establishing district or provincial cattle markets where farmers can bring their cattle for sale by auction. This not only provides a more transparent market information system but can aid in disease control as well.

The cattle market demand in Cambodia is growing the market system is undeveloped compared to some neighbouring countries. There are weak linkages among farmer and trader that cause for poor collaboration between each actor in cattle market chain. The small household farmers are limited access to market information and access to credit loan for expansion cattle production.

**Table 4. SWOT analysis**

<b><u>Strengths:</u></b>	<b><u>Weaknesses:</u></b>
<ul style="list-style-type: none"> <li>• <i>About 80% of Cambodians live in rural areas and are comfortable raising cattle,</i></li> <li>• <i>Both domestic and export demand for cattle has been increasing yearly, with ready access to Vietnam markets.</i></li> <li>• <i>Local beef consumption is increasing every year, due to urban living standards and numbers of tourist visiting Cambodia,</i></li> <li>• <i>Farmers readily accept technical assistance from projects and NGOs.</i></li> </ul>	<ul style="list-style-type: none"> <li>• <i>Most of farmers in SE region raised cattle for draught power in agricultural activities rather than for marketing oriented.</i></li> <li>• <i>Cattle production in Cambodia is typically low productivity due to low quality feed and poor biosecurity.</i></li> <li>• <i>Most farmers have low levels of education and literacy.</i></li> <li>• <i>Smallholder farmers have limited access to market information, and formal markets with subsequent lower ability in price negotiations with traders.</i></li> <li>• <i>Traders and farmers have limited access to credit for expansion, buying cattle for fattening.</i></li> <li>• <i>Farmers have limited access to vaccinations their cattle.</i></li> <li>• <i>The Government technical support services to farmers are limited.</i></li> <li>• <i>Cattle enterprises are small scale, from 2-5 head per family/household.</i></li> </ul>
<b><u>Opportunities:</u></b>	<b><u>Threats:</u></b>
<ul style="list-style-type: none"> <li>• <i>Market demand and prices both expected to continue to increase in the region.</i></li> <li>• <i>Potential to increase cattle production in Cambodia with improved production and biosecurity</i></li> <li>• <i>Local traders expressing demand for higher-quality cattle both domestic and export markets.</i></li> <li>• <i>Farmers experience in cattle production presents an opportunity for rapid uptake of technical assistance.</i></li> </ul>	<ul style="list-style-type: none"> <li>• <i>Disease risk is enhanced by: high occurrence of illegal cattle movement;</i></li> <li>• <i>limited access to veterinary services at village level;</i></li> <li>• <i>lack of awareness of importance of vaccination,</i></li> <li>• <i>Climatic variability is presents a large risk - long dry seasons. Water storage infrastructure is needed.</i></li> </ul>

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