

Goat supply from Enrekang, South Sulawesi to East Kalimantan: A long and winding road¹

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ABSTRACT : East Kalimantan (Kaltim) has a low goat population and an expanding human population and demand for goats. Enrekang Regency is one of the suppliers of this demand. This paper describes the goat supply chain to Kaltim, identifies areas for improvement and the possibilities for export. It is based on interviews and focus group discussions with farmers and traders from Enrekang and collectors/traders along the chain via Polewali, Majene and Mamuju and then via ferry to roadside sellers in Balikpapan and Samarinda. Male goats are mainly sold for cultural ceremonies for which they are preferred, while smaller females are sold to roadside *warungs*, mostly for *sate*. Prices of 20-30 kg goats in Enrekang fetch about Rp30,000/kg, but sell for about Rp50,000/kg in Kaltim. Goats pass through four main parties in the chain, with a range of transport methods, and feeding and watering of goats along the way is problematic. The length of this chain when combined with the small size of the enterprises involved means it is almost impossible to deliver a large consistent line of animals as would be required to export to other countries such as Malaysia.

Key words: goat, consumers, export, cultural influences

INTRODUCTION

There is high local, inter-province and international demand for goats in Indonesia. The South Sulawesi province (Sulsel) has been approached by other countries, including Malaysia, to supply goats (H. Muh Arifin Daud, [Head South Sulawesi Livestock Department] pers. comm., 17th February 2009). While some might consider this a welcome request, the issue for Sulsel to address is whether the province has the number and quality of goats and whether the appropriate infrastructure and systems are available in the supply chain to meet this demand.

In 2007, South Sulawesi province ranked 9th of all Indonesian provinces in terms of the number of goats with 466,000 head or 3.2% of the national flock (Indonesian Directorate General of Livestock Services 2009). However, outside of Java, which has a majority of Indonesia's human population it is a major source of goats. The number of goat slaughtered in South Sulawesi in 2007 was 68,000 head (South Sulawesi Department of Livestock Services 2009). However, these statistics do not show the true picture of what is happening, because Sulsel imports and exports goats and detailed estimates of these are not available. A number of limitations constrain the development of the goat industry in Sulsel including: consumer attitudes to goat meat; poor and unhygienic marketing and processing facilities; an array of taxes, charges and impediments to trade; a lack of knowledge of the market and supply chain; limited understanding of goat husbandry; and poor knowledge of goat nutrition, reproduction, and internal and external parasites. There is the potential for a more appropriately integrated supply chain through improvements to: markets and market information flows; productivity and product quality; transport, processing, storage and marketing transaction costs; supply chain infrastructure; and government policy frameworks.

¹ The Australian government funded this project through the Australian Centre for International Agricultural Research as part of Project No. SMAR/2007/201 'Improving goat production in integrated estate cropping systems in South Sulawesi'.

This paper reports part of the findings of research addressing some of these issues conducted in the Enrekang Regency of Sulsel. This research had the aim of developing an understanding and insight of the goat supply chain in South Sulawesi and identifying possible interventions that would improve smallholder and chain profitability. The Enrekang Regency is one of the key goat production centres in South Sulawesi with 54,000 goats in 2007 or 12% of the provincial population (South Sulawesi Department of Livestock Services 2009). It is located towards the north of the province in a highland area which represents one of the environments used to produce goats in Indonesia. This paper reports part of the supply chain of goats from Enrekang which supplies goats to East Kalimantan (Kaltim). The objectives are to describe the goat supply chain, identify areas for improvement and draw some conclusions about the possibilities for export.

MATERIALS AND METHODS

The main methods used were interviews and focus group discussions with farmers and traders from Enrekang and collectors/traders along the supply chain via Polewali, Majene and Mamuju and thence via ferry to roadside sellers in Balikpapan and Samarinda. A survey was carried out in two villages in the Enrekang Regency, Bolang and Kambeolangi to attain base information about the selling rates and prices for goats at the farmer level. Market information was obtained from semi-structured interviews and observations at the following markets:

Sudu market, which is the central goat market in the Enrekang Regency.

Wonomulyo market, the centre of goat trading in Polman Regency, Western Sulawesi.

Merdeka market, Samarinda Regency, East Kalimantan.

Gunung Api market, Balikpapan Regency, East Kalimantan.

The later two markets sampled were the target market for goat selling in Kalimantan. The respondents were the buyers, collectors and inter-island traders. Participants were identified through a process of intercepts in the markets and snowballing. Data was also obtained from semi-structured interviews with trans-island traders from West Sulawesi and six roadside traders in Balikpapan and 10 roadside traders in Samarinda. More general information about the trade in goats in Sulsel comes from statistics, the literature and interviews with goat sellers and butchers in Makassar and other locations between Makassar and Enrekang and with cattle slaughter houses in Sulsel.

Qualitative information was analysed by categorising answers into themes and related issues. Quantitative information on prices is presented as averages or distributions. Because the data were not collected randomly and because of the small sample sizes, therefore, the statistical tests could not be conducted.

Goat Trade in South Sulawesi

General Trade Routes for Goats in South Sulawesi. Goat trading activities, whether within or between islands, has occurred for a long time in Sulawesi, consequently there are traditional routes and sources of goats alongside developing routes and sources. Distribution routes of goat in South Sulawesi start in the areas with high goat populations in Selayar, Jeneponto, and Enrekang Regencies and move toward the main markets in Makassar and Kalimantan. There is also anecdotal evidence that goats are brought to Jeneponto and Selayar areas from the island of Flores and other islands in Nusa Tenggara Timur province. The flow of goats is from the southern areas such as Selayar and Jeneponto north to Makassar, while the goats from the northern areas such as Enrekang flow west towards Kaltim (Figure 1). We could find no evidence of goats from Enrekang going south to Makassar. However, some goats also go north to Palopo.

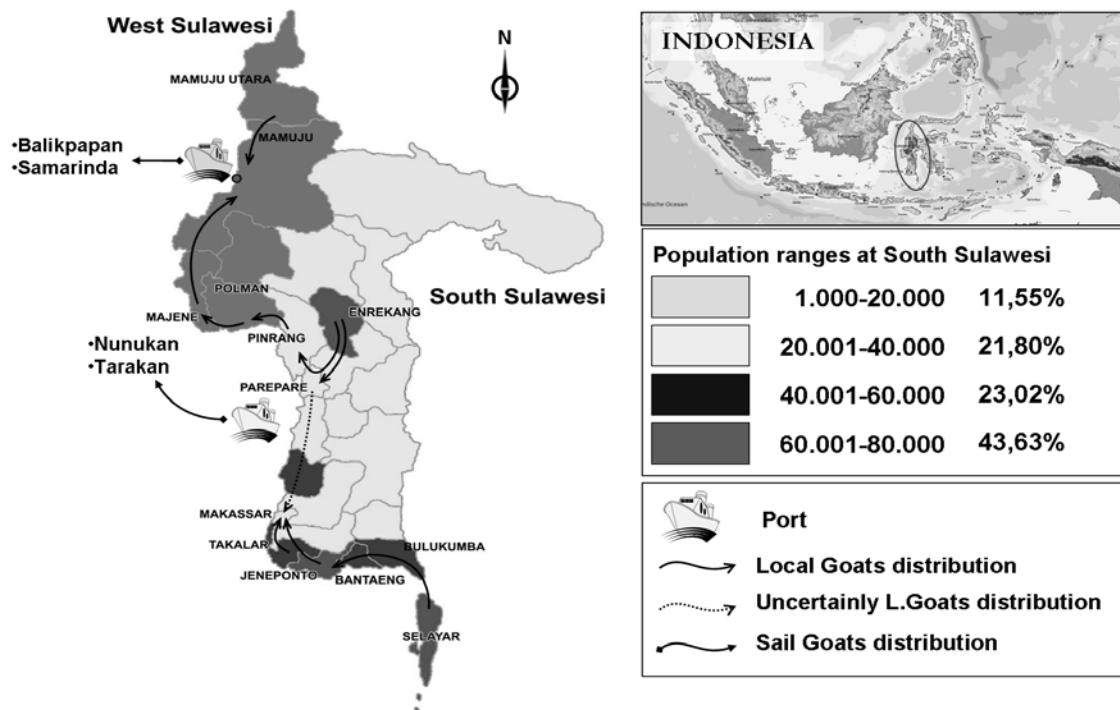


Figure 1. Routes of goat trade in South and West Sulawesi to markets in Makassar and Kalimantan

Goat Trade from Enrekang to Kalimantan. Most goats sold out of Enrekang Regency go west. There are two ports through which South Sulawesi goats are shipped to Kalimantan, Parepare in Sulsel and Mamuju in West Sulawesi. However, the number of goats going to Kalimantan through Mamuju is higher than through Parepare port. Of the goats shipped through Parepare, most are taken by ferry to Tarakan (East Kalimantan) and Nunukan (East Kalimantan), which is close to the Malaysian border. The trip takes 48 hours to Nunukan, where some goats are transferred to a smaller boat for the 6 hour voyage to Tarakan. About 30 to 40 goats are sent in each consignment, 2 to 3 times per month. However, before *Idul Adha* larger shipments are made, normally around 100 goats. Because of cultural preferences at this time mostly large male goats are sent and very few females, with no colour, age or breed preference.

On the other hand, the traders from Pinrang Regency buy goats from Sudu Market in Enrekang Regency to market in Wonomulyo Market, Polman Regency, West Sulawesi. Goats from this market are then taken to the market in Majene district (West Sulawesi) where they are combined with other goats to be taken to the ferry port in Mamuju city (West Sulawesi). About 400 to 600 goats per month are taken by ferry to the port of Balikpapan Kaltim, a trip of about 19 hours, from where some are then taken by land to Samarinda city (Figure 1).

Participants in The Chain from Enrekang Regency to East Kalimantan. There are five parties involved in the supply of goats in the Sulawesi-Kalimantan chain (Figure 2), farmers, small scale collectors (SSC), medium-scale collectors (MSC), large scale collectors (LSC), and roadside sellers (RSS) (the latter both in Sulawesi and Kalimantan). Generally the goat farmers in Enrekang and the rest of South and West Sulawesi are small farmers having 1 or 2 bucks and 1 to 5 does. Farmers sell goats either at a local market or to a SSC who buys goats from farmers at a local price, which varies with the size and sex of the animal. Entire males bring a higher price. Usually, the small collector buys 3 to 5 goats per day. After between 4 to 7 days, these goats are sold to a MSC. Normally a MSC accumulates goats for 5 to 7 days until they have about 40 goats, with a range from 25 to 50 goats. Unlike a SSC, a MSC buys goats of a similar size and hence price based on the demand of LSC's and traders in Kalimantan.

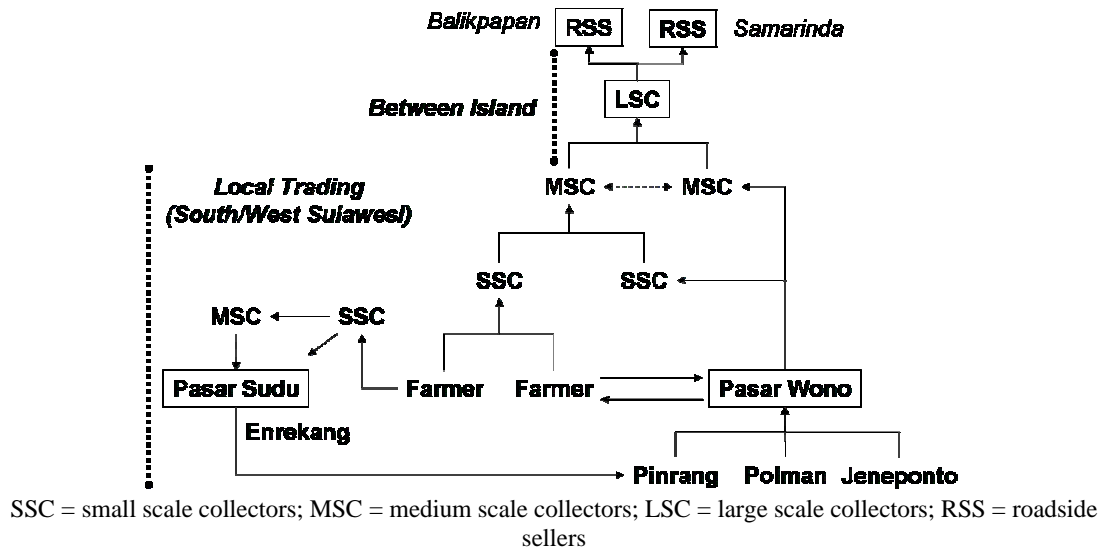


Figure 2. Goat market chain from Enrekang, South Sulawesi to East Kalimantan

MSC's obtain goats from a range of areas, even collecting from further north up to the border of Central Sulawesi (Suremana, Donggala), especially before the *Idul Adha* festival. We were able to identify 25 MSC's from Majene and Polman, West Sulawesi, and five from Pinrang, South Sulawesi. Furthermore, 4 to 5 MSC's combine to deliver goats to Kalimantan by six-wheel truck with a capacity of 120 goats. There are also three well-known LSC's who supply roadside sellers in Balikpapan and Samarinda. The roadside sellers were not natives of Kalimantan, but came from Sulawesi. Most of them were from the Mandaris or Bugisnes ethnic groups in West Sulawesi. They had been living in Kalimantan for many years and use goat trading as their main source of income.

The Goat Market in East Kalimantan

Sales of Goats. Roadside sellers in East Kalimantan order goats from MSC's in West Sulawesi, with the MSC's delivering goats about three times per month. Ordering of goats is conducted by phone and every seller has their own supplier. Of the 15 roadside sellers interviewed, most had holding pens for 100 or 200 goats. Their average number of goats ordered per month was about 90, with a range of 20 to 200 goats. This more than doubled during the days before *Idul Adha* to about 200 goats, with a range of 50 to 600 goats.

These roadside sellers are also the goat meat suppliers for the *sate* sellers at the local mobile sate carts or sate stalls. Two sellers from these mobile carts who were interviewed use 1 goat every 3 to 4 working days and 1 goat during the weekend while a seller from a street stall (Warung) used 1 goat per 1 working day and 2 to 3 goats during the weekend.

Sellers Preferences for Goats in Kalimantan. According to goat sellers, the main breeds of goats in demand are PE-Cross and Kacang goats. Most sellers (63%) preferred selling male, 13% preferred female, and 25% preferred selling both male and female. Generally, consumers bought goats for special occasions (e.g. births ceremonies, *nazar*, *syukuran*) and here, males are required and more preferred as buyers believe male goats bring more "barokah" (blessings) than female goats. The demands for female goats differed from those of males. Female goats are mostly bought by the *sate* sellers as they believe their meat is tenderer than meat from males. Goats from Sulawesi are also preferred (called locally Majene goat) because they are perceived as having better performance than local goats from Palu and Madura, although they are also cheaper. Most also bought medium or small size goats, as their prices are cheaper and more affordable than large goats.

Relationship between Size and Price in Kalimantan. Goat sellers judge goats based on their size and appearance and divide them into three categories, small, medium or large. Because it was not possible to weigh goats, heart-chest girth was used to estimate the size of animals. The measured animals were chosen by the sellers depending on their size classification. Based on the goat measurements, the heart-chest girth varied as shown in Table 1.

Table 1. Heart-chest girth measurements based on the size of goats identified by sellers in Kaltim

Parameter	Size (cm)		
	Small	Medium	Large
Heart-chest girth	51 – 68	60 – 78	72 – 91
Average	60.2 ± 4.2	70.3 ± 3.6	80.3 ± 5.0

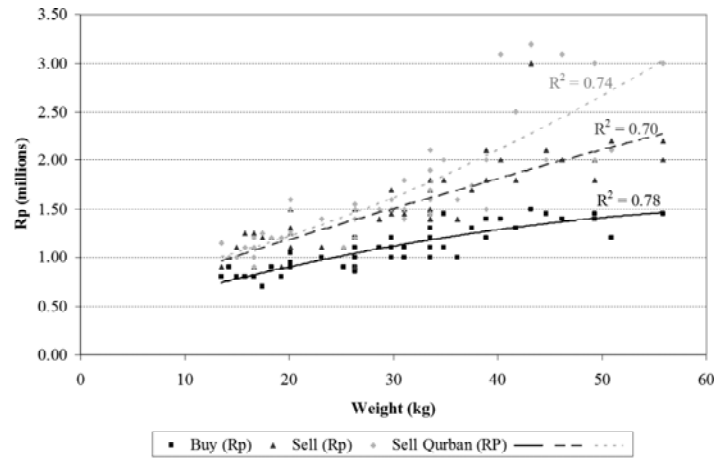
The buying and selling prices of goat in Kalimantan increase with the size of the goats. Figure 3 shows the relationship between live weight and the price of goats. The live weight (Wt) has been calculated from heart-chest girth (Gth) using the equation $Wt = 0.014 * Gth^2 - 0.7914 * Gth + 15.427$ derived from our previous work on this relationship. The average buying price for goats was Rp 1,090,000 for a 30kg goat or Rp 39,000/kg. The average selling price was Rp 1,500,000 or Rp 53,000/kg. There is a positive correlation between live weight and prices as shown in Figure 3. The coefficients of determination (R^2) for all curves are higher than 0.70. The rate of increase in live weight with buying price is negative indicating less competition for large sized goats from buyers in Kalimantan. This condition is supported by the information from MSC's in Majene and interviews with traders on the ferry, who stated that sometimes they get relatively lower prices for larger animals. It is further supported by the evidence in Figure 4 of the decline in sale price per kilogram ($R^2 = 0.56$) from around Rp 70,000 for smaller animals to Rp 40,000/kg for larger animals.

The average marketing margin between selling and buying price is around Rp 410,000 or 38%, with a smaller marketing margin for smaller animals and a larger margin for larger animals, although the trend was unclear. Prices generally increase for the *Idul Adha* festival. The average selling price for this occasion for the same goats was estimated at Rp 1,680,000/30 kg goat or Rp 58,000/kg. The average prices increased about 12% (Rp 180,000), with a possible greater increase for larger goats, although some roadside sellers said they decrease the prices of large goats.

In the normal market situation, roadside sellers said regular buyers for goat were generally from restaurants, and sate cart sellers. In Balikpapan and Samarinda there are hundreds of sate cart sellers and some restaurants that serve meals made from goat meat.

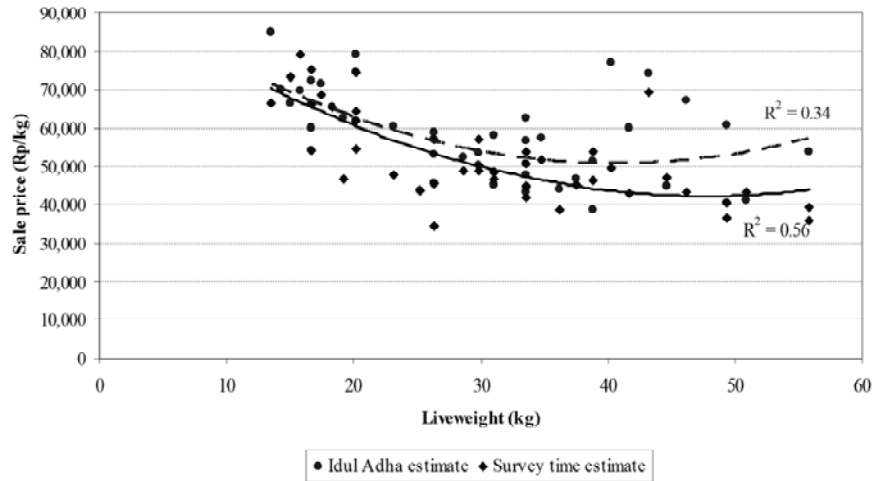
Comparison of Goat Sale Prices between Potential Rural and Urban Markets for Enrekang Goats. Goats from Enrekang mainly move west towards Kalimantan and not south towards the largest regional city of Makassar. While this may reflect traditional routes, contacts and preferences, traders are aware of prices in other markets and could potentially source goats from other areas if this was profitable. An assessment of the price differences was made by obtaining goat prices in the Sudu market (Enrekang Regency), Wonomulyo market (Polman Regency) and from sellers in East Kalimantan (Balikpapan and Samarinda) and Makassar to see if this might be possible. This information is presented in Table 2.

Prices for goats in the Sudu and Wonomulyo markets are similar at the lower live weights, but there is a large difference for heavier goats. The latter requires further investigation, because it could reflect differences in these two markets or it could be due to collection errors. The results from this price information must be treated with caution. First, the prices were mostly estimates by the sellers of what price they would receive. This plus a measurement of heart-chest girth was used to estimate selling price per kilogram live weight. Second, while these prices were collected outside times of peak prices, they were not collected at the same time because of resource and other constraints and hence may be influenced by seasonal and other factors. Finally, the price per kilogram at a given live weight was derived by substituting it into an estimate of the quadratic polynomial relationship between live weight and price per kilogram live weight for each market, which could compound the sources of error mentioned above.



* Estimated from heart-chest girth measurement using $Wt = 0.014 * Gth^2 - 0.7914 * Gth + 15.427$
 Note: Trend lines are quadratic polynomial

Figure 3. Relationship between estimated live weight* and the buying and selling prices at the time of the survey and an estimate of the buying and selling prices for *Idul Adha*



Trend lines are quadratic polynomial

Figure 4. Relationship* between body weight and price of goats in Kalimantan

Table 2. Estimated prices* of goats (Rupiah per kilogram live weight) in markets of Sudo, Wonomulyo, Kalimantan and Makassar

	Live weight estimate, kg		
Location	20	30	40
Sudo	34,227	27,411	29,413
Wonomulyo	35,984	25,890	19,449
Kalimantan	59,801	49,424	43,853
Makassar	46,615	47,404	48,857

* Prices estimated from heart-chest girth and quadratic polynomial trend lines

It is apparent that there may be potential to send goats from Enrekang to Makassar, but this is most likely to be profitable for larger goats than for small goats. Interestingly, price per kilogram live weight declines in Kalimantan but not in Makassar. However, the Makassar market requires further investigation because the R^2 for its relationship was much lower than the relationship for the other markets.

OTHER MARKET DYNAMICS THAT MAY AFFECT GOAT SUPPLY AND DEMAND

Seasonal and Cultural Dynamics

Budisatria et al. (2008) classified the goat market in Java into three conditions, good, normal and risky market situations. The good market situation occurs when the market is associated with the religious festival of *Idul Adha*. The *Idul Adha* marketing period starts at about three weeks before this festival. The normal market situation means that the market is not affected by special circumstances. The risky market means that the market for the small farmers is critical, because in that period they need cash to pay for school fees and prepare paddy fields.

Similar conditions may exist for this study, although specific market data was not collected for a possible risky time. However, there is an opportunity for farmers to take advantage of increased demand for goats for *Idul Adha*. SSC's indicated the number of goats demanded increases up to 120% for *Idul Adha*, and they will load a truck with about 120-125 goats to take to Kalimantan. At this time the main demand is for male goats because of the religious requirements (Jabbar 1998; Budisatria et al. 2008) and this is reflected in the demand from roadside sellers in Kalimantan.

The risky market situation (for the farmer) is a good market situation for all goat collectors, traders and roadside sellers. The farmer needs money, which forces them to sell goats for a low price. Evidence from small and medium sized collectors suggests price variations are more likely to occur in the Wonomulyo market than the Sulu market. In the Wonomulyo market the collectors say the price decrease dramatically from June to August, the time for paying school fees and planting paddy.

Transportation Problems

Goats pass through a number of traders and are transported by motorbikes, pickups and trucks. During transportation, the densities of goats on trucks are about five head/m². The trip over land and sea takes approximately 30 hours, during which the goats are rested and fed only twice. It appears there is no special treatment for goats before and after the transportation process even though some goats may be sick or pregnant does. Feeding and watering of goats along the way is also problematic, which causes a decline in the condition of the goats by the time they arrive in Kalimantan.

Opportunities for Increased Production

There appears to be an opportunity for increased goat production in South Sulawesi to meet growing demand. Yearly needs for goat based on statistical data and our survey (see also Murray-Prior et al. 2010 in this conference) appear to offer potential to improve the supply of goats. In Indonesia, about 90% of the people are Moslem. This could offer a possibility for small ruminant farmers to benefit from the important role of small ruminants in the social life of the people (Budisatria et al. 2008). Malaysia, the nearest neighbour country is also a potential market for goats from Sulawesi and approaches have been made to provincial governments. Nunn (2006) reported that approximately 45,000 live goats, worth about AU\$4 million, are exported annually to Malaysia from Australia.

However, a number of factors are currently working against the potential for export. Prices of goats are relatively high when compared with prices of other local meats and with imported meat prices. Therefore it appears that supply is currently only sufficient to meet local needs. The export market to Malaysia requires large consistent lines of animals, something that does not exist at present. There are currently no slaughter houses with facilities to slaughter and freeze goat meat. Finally, there needs to be considerable improvement in infrastructure and practices if live export is to be successful. There is

an opportunity but this is a medium to long-term opportunity at present as there will need to be changes in government policies and support for the industry for this potential to be realised.

CONCLUSION

Goats from Enrekang pass through a number of traders and markets en route to Kaltim. There is evidence that transportation and feeding along the way is problematic and may stress goats and decrease the quality of the end product. There are two main markets for goats in Kaltim, larger male animals for the cultural and religious ceremonies and smaller female goats for restaurants and sate sellers. Sellers along the chain and in Kaltim have long-term relationships, but it may be possible for farmers to organise and deliver more directly to markets in Kaltim and thereby deliver a better quality product.

Currently there are a number of constraints to exporting goats from Sulse to Malaysia including: low productivity, poor product quality, inappropriate transport, a lack of processing and storage infrastructure, and high transaction costs. However, currently it is unlikely that Sulse goats would be competitive with imports from other areas because of their relatively high prices and insufficient numbers of consistent size and quality goats.

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