

MYANMAR
DRY ZONE DEVELOPMENT PROJECT
SCOPING MISSION

ANNEX 3: MARKETING AND VALUE CHAINS IN THE CENTRAL DRY ZONE

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A. Introduction

Myanmar has a number of agro-ecological zones allowing it to produce a wide range of both temperate and tropical crops and to be self-sufficient in its staple food crop rice. The targeted project area in the Central Dry Zone covers 6 Townships and associated villages in the regions of Magway (2- Pakkoku and Yesagyö) and Mandalay (4- Myingyan, Natogyi, Thaingthar and Mahlaing). The targeted villages are characterized by having relatively small cropping areas with average cropping of under 5 acres per household with no or minimal irrigation and production dependent on the monsoon rains. Irregular and unreliable rains in recent years have adversely affected crop production and yields with the consequence that marketable quantities at household level are relatively small. The principle crops grown are pulses (green and black grams, chickpeas, pigeon peas) and oilseeds (sesame, sunflower and groundnuts). Other crops are dry land paddy, sorghum and short staple seed cotton and yellow maize. Other production activities are the raising of sheep and goats, cattle, pig fattening and small scale poultry; oxen are kept for draught purposes. Sheep and Goat rearing and pig fattening are the primary livestock income earning enterprises.

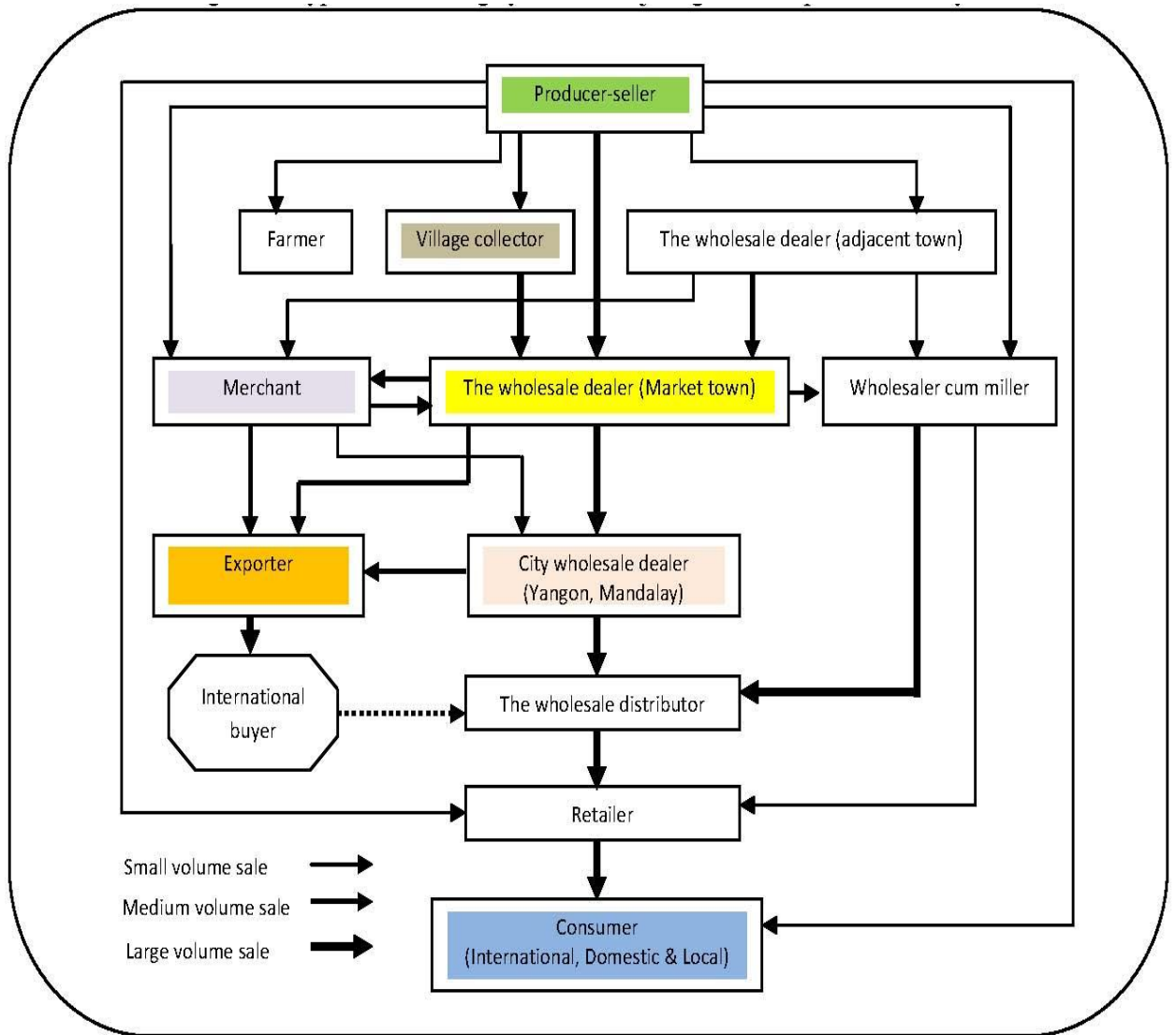
B. Status and Situation Analysis

B.1 Current situation and trends

During field investigations the marketing arrangement for pulses and oilseeds in the project townships was considered competitive and farmers generally had good access to markets for their crops. Transport links and roads to township markets were rated as generally good. The Qualitative Social and Economic Monitoring Report (QSEM- Oct 2012) found that villages in the dry zone had much better access not only to local but also to markets elsewhere in the country, than villages in other States. This had knock-on effects down the chain. Regular transport and good roads in the dry zone enabled farmers to grow cash crops for sale in other markets, rather than simply paddy or crops for household consumption. Good transport links in the dry zone reduced the cost of getting goods to market, which kept such goods competitive and, because farmers could themselves travel to township markets and choose among brokerage houses, they were in a stronger negotiating position on prices than farmers elsewhere.

Infrastructure and transport links to township markets and to the rest of the country were much better in the dry zone than in other places. Villages in the dry zone—particularly in Mandalay Region—had the best market access. In the dry zone, farmers tended to sell their products directly at commodity exchange centres/brokerage houses in townships, where buyers were often part of larger trade networks. Transportation to such brokerage houses was good and regular, especially during harvest time. It usually took the form of a regular truck travelling between the village and the brokerage houses/commodity exchange centres. Brokerage houses then sold the goods on to retailers, local processors or to other larger commodity exchanges such as Mandalay or Yangon where produce was also sold to exporters for shipment to China or India.

Fig 1. Typical Marketing Arrangements for crop marketing in the Central Dry Zone



B.2 Key Stakeholders, Institutions and Performance

The project area is served by four commodity exchanges (Pakkoku, Myingyan, Taungthar and Mandalay) and one traders association (Yesagy). Natogyi Township has no commodity exchange but sales are made at village markets in Chaukse. The large commodity exchanges in Mandalay and Yangon also receive produce from the project townships. The various exchanges were established after the 1988 liberalization of trading in pulses and oilseeds as before that time all produce was purchased through village cooperatives at fixed prices for sale by the Myanmar Agriculture Trading Company (MAPT). The Pakkoku Exchange was established in March 1989 and has 462 members. Pulses are the largest traded product with trading over the year and peak sales at harvest from March to May. Peak sales for sesame are in December. Trade at the Pakkoku Exchange is by 'Dutch' auction with prices descending till a sale is secured. Trade also takes place between buyers and sellers outside the Pakkoku exchange premises but at prices based on the Exchange prices; sales outside the exchange are reported to exceed sales in the Exchange. It is estimated that 75% of sales (volume) in Pakkoku are to Yangon and 25% to Mandalay although Sesame is 50-50 and Pigeon peas are to Yangon only.

The Myingyan Traders, Brokers and Millers Association operates the Myingyan Exchange which was established in November 1991. The Association has 350 members comprising 160 traders, 100 brokers and 90 millers (oilseeds, chickpeas). The exchange does a large trade in chilies and onions (25,000tons) and pulses and oilseeds (30,000tons). Pigeon peas are sold mainly to Yangon traders and CP corn and sesame to Mandalay for eventual export to China and groundnuts to local oil mills for sale to Yangon. Daily prices are broadcast on FM radio and published daily on the Exchange notice board. Traders buy direct from farmers for their own account or act as brokers for the farmers. The trading floor opens at 11am and sample produce lots are offered for sale to interested buyers and prices are negotiated between sellers and buyers based on prices at Yangon, Mandalay and Pakkoku which are announced at the start of trading. Buyers pay 1% commission and brokers selling commission is 1.5% for oilseeds, cereals and pulses and 5% for onions and chilies. Most traders have their own godowns as do the larger brokers.

The Crop Exchange Centre in Taungthar Township is a relatively new enterprise and was established in July 2013 with assistance from LIFT through the Myanmar Business Coalition on Aids- MBCA. MBCA provided a 50% grant to purchase the land and building for the exchange. The exchange has 100 members comprising 87 brokers/traders, 10 oil millers, and 3 goldsmiths/handicraft traders. Producers visit the exchange to sell to traders who are exchange members, samples are taken and prices are then negotiated between producer and trader; or local produce collectors/agents collect from villages and sell to traders. Trade is in onions, pigeon peas, groundnuts, sesame and chickpeas. Before the Exchange was established traders undertook buying and selling from their individual premises with each having their own godown (20-100 tons). With the exchange, transaction costs and times have been reduced. Onions from the exchange are shipped to Yangon and to Thailand, sesame is sold to traders on the Mandalay exchange for export, pigeon peas are sold to Yangon traders for export to India and chickpeas are sold locally. Trade finance is available from the Myanmar Economic bank at 13% pa with collateral but 75% of the trading was reported to be self-financed. It

is estimated that some 40% of local produce is going through the exchange with traders from other towns e.g. Myingyan buying direct from villages (60%) for sale directly to Yangon and Mandalay. The Exchange does not have a price board but daily prices on the exchange and other exchanges are given by phone to interested parties.

The Yesagyo Traders Association comprises 50 traders and 8 oil or pulse millers with members buying produce from farmers delivering to them for their own account or as agents for larger Pakkoku or Mandalay traders. Traders sell produce to traders or exporters primarily in Mandalay or use Mandalay members to place the produce on the Mandalay Exchange. Broker commissions on the Exchanges are reasonable at 1.5% for oilseeds and pulses sales, 5% for onions with buyers paying 1% to the brokers. Traders have their own storage facilities to receive and store crops and their own transport. Trade Finance is available at 13% p.a. from private Banks with collateral based on the traders fixed assets.

The Brokers, Traders and Millers Association operate the Mandalay Commodity Exchange one of the most important in the country. The Exchange was originally established in 1935 but suspended operations from 1964 to 1988 when open market trading was severely restricted. The Exchange has some 2000 members with 800 actively involved in trading. Most members are brokers with others being millers (wheat, oil or pulses) and some 70 crops are traded daily. The main crops traded are Oilseeds – (groundnuts, sesame sunflower, soya, mustard and safflower) and pulses (black and green grams, pigeon peas, and chickpeas) and local wheat. Grams are destined for export to China and pigeon peas and chickpeas to India. 70% of yellow maize is exported to China and 30% is sold to local feed mills. Most traders have their own godowns (400 tons) and either buy for their own account or as agents for traders in Yangon and China (Muse).With good road access to China, some 70% of produce is going to China (100% sesame in 2013 and 75% groundnuts). 70% of sales to China are orders from Chinese traders and 30% are sales by Myanmar traders at Shweli market using Chinese brokers who take 1-2% commission on sales.

Farmers sell to traders or brokers in the commodity exchanges by bringing produce to the traders' premises or they occasionally sell to trader agents who buy the produce at the village on behalf of traders. The Commodity Exchange membership comprises mainly traders and brokers but millers (oilseed, pulses and feed millers) are also members. Trading (selling or buying) on the exchanges is only open to Exchange members who often are acting as agents of traders on other exchanges, especially Mandalay and Yangon. Trading in all the exchanges is done by samples placed on trading tables which are then viewed and bid upon by the exchange members (traders, millers or brokers).. Price information from other exchanges is made available on the trading floors and is the basis for price setting.

B.3 Market Price Information

The capacity of producers to get good prices for their goods was constrained not so much by a lack of information but rather by a lack of credit and storage facilities (QSEM 2012). Getting price information was not that difficult for farmers in the dry zone since there were regular buses keeping people in contact with outside developments. Few farmers were in a position to store, save, or keep

their produce in order to negotiate for a better price or to sell later in the season when prices are normally higher. Some large farmers from Mandalay and Magway did make inquiries about prices before they sold by using mobile phones and other phone services. Information on prices is freely available at the various Commodity Exchanges and is also broadcast on local FM radio stations. The Ministry of Agriculture and Irrigation publishes a weekly price information bulletin but its circulation of 1000 copies is limited; however, it also provides this data to newspapers and weekly journals to publish and this expands the circulation of information. A detailed Weekly Market Information Bulletin covering the most important crops (paddy, rice, pulses and oilseeds) is produced by the E-Trade Company in Yangon. The E-Trade information on the internet is mainly used by traders (2000 subscribers). An automated MIS telephone reply system is also provided and has 15000 subscribers. Information is provided (price data for different packages (pulses/ oil seeds/ Mumbai / Exchange of Yangon) to 3000 subscribers. Mobile application and price information and news (Mobile application) is subscribed to by 12000 persons.

Table1. Daily and weekly price collection in Crop Exchange Center (CEXC) and local markets (2012)			
Sr. no	ACEXC/ Market	Commodity	Price collection
LOWER MYANMAR			
1	YGN-CEXC	Pulses, maize, culinary crop, and edible oil	Daily
	YBNWM	Rice, edible oil	Daily
	YTMWM	Fruits and vegetables	Daily
	YGN-YUZANA	Food stuff	Weekly
	Fish market	Fish price	Weekly
	YBNWM	Dried fish and animal feed	Weekly
	Yangon market	Fuel price, gold price and exchange rate	Daily
2	Hinthada CEXC	Pulses, maize	Daily
3	Pyay -CEXC	Pulses, edible oil	Daily
	Pyay market	Edible oil	Daily
4	REXC-Yangon	Rice price	Daily
5	6 Rice mills in Ayeyarwaddy delta	Paddy and rice price	Daily
4	Mawlamyine	Rubber	Daily
UPPER MYANMAR			
5	Aunglan-CEXC	Pulses, oilseeds, and edible oil	Daily
	Aunglan market	Edible oil	Daily
6	Magway-CEXC	Pulses and oilseeds	Daily
	Magway market	Edible oil	Daily
7	Pakokku-CEXC	Pulses, maize, oilseeds	Daily
		edible oil	Daily
8	Myingyan-CEXC	Pulses, maize	Daily
	Myingyan market	Rice, Onion	Daily
9	Mandalay-CEXC	Pulses, maize, wheat, oilseeds, and edible oil	Daily
	Mandalay market	Rice and culinary crop	Daily
		Gold price	Daily

10	Monywa-CEXC	Pulses, maize, wheat, oilseeds, edible oil	Daily
11	Shwebo	Pulses and oilseeds	
12	Larshio	Maize	Daily
13	Muse	Maize, oilseeds, pulses, and exchange rate	Daily
14	Taunggyi-CEXC	Pulses, maize, oilseeds, culinary crop	Daily

The majority of sales by farmers are at harvest time when prices are lowest due to the need to liquidate high cost credit (10-15% per month from money lenders) taken at planting or as dictated by the credit agency (PACT or MADB). Over 90% of sales are done individually with the traders as farmers are reluctant to engage in group selling or marketing. Storage of crops on farm is minimal except for seeds and paddy or livestock feed (sorghum) as most of the crop is sold immediately after harvest.

The prices paid to farmers for their crops (pulses and oilseeds) which are predominantly exported by traders are dependent on the international market prices for these crops in the major export markets- China and India. As indicated below prices will vary over the year and between years and so farm and trader prices will reflect these changes. A key factor affecting the profitability of prices received is the Kyat vs US Dollar and Chinese Yuan exchange rate which has fluctuated over the years; a high dollar exchange rate per kyat enhances returns in local currency and vice versa. Farmer returns are dependent not only on the prices received but also on the crop yields achieved so the importance of maximizing yields through using good seeds and inputs is paramount.

Fig 2 and Table 2 Weekly average selling price of USD and export earnings in Yangon 2008-2014 and Yearly average selling prices of USD and FEC and export earnings



Year	USD	FEC	Export earning
Kyats			
Yearly average selling price			
2006	1281	1248	1324
2007	1304	1282	1412
2008	1200	1120	1198
2009	1077	1030	1095
2010	973	934	1021
2011	818	791	850
2012	850	845	852
2013	896		897
January 2014 (This week's average price)	984	-	897

Source: E-Trade Yangon

B.4 Value Chain for Pulses

Myanmar is a significant producer and exporter of pulses (green and black grams and pigeon peas) which totaled some 1.25 million tons, valued at \$793 million in 2012-2013. Chickpea exports were 46,900 tons (\$34.3m). Domestic prices are therefore based on international export prices and fluctuate with international price movements. It also means that volumes able to be exported are basically unlimited if prices are competitive. Black gram is purchased by pulse millers in Mandalay and Yangon and is also exported to India through local exporters and traders who sell FOB Yangon. Red pigeon peas are produced mainly in the CDZ and sold to India via Yangon. Green grams are mainly produced in the CDZ and are shipped to Muse for sale in China (Shweli –Ruili). Chickpeas are sold to local pulse mills and traders and shipped to Yangon where local exporters ship it to India. Prices can vary up to 30% over the year as stocks after harvest are run down. CP Yellow maize is grown in the CDZ and finds a ready market for sale to local feed mills (Pakkoku and Mandalay) and also is exported to China via Muse.

Table 3 Export of Pulses from Myanmar 2012-2013

Pulses	Pulses Export volume (Tonnes)	USD million	Average export price (USD per tonne)
Black gram	657712	382.397	581
Green gram	302298	240.473	795
Pigeon pea	296124	170.355	575
sub-total	1256134	793.225	631
Cowpea	42502	36.888	868
Kidney bean	11691	10.133	867
Butter bean	12754	8.537	669
Rice bean	6658	2.490	374
Lablab bean	1333	1.091	818
Sultani	2509	1.395	556
Sultapya	166	0.089	536
Chickpea	46907	34.388	733
Duffin bean	147	0.086	585
Bocate	1386	0.637	460
Soybean	5094	3.530	693
Other pulses	32475	20.411	629
Total	1419756	912.9	643

Source: Ministry of commerce, Commerce journal, vol.13, No37, Sep.30, 2013.

Fig 3 Black Gram Prices 2012-2013 in Yangon and Mumbai

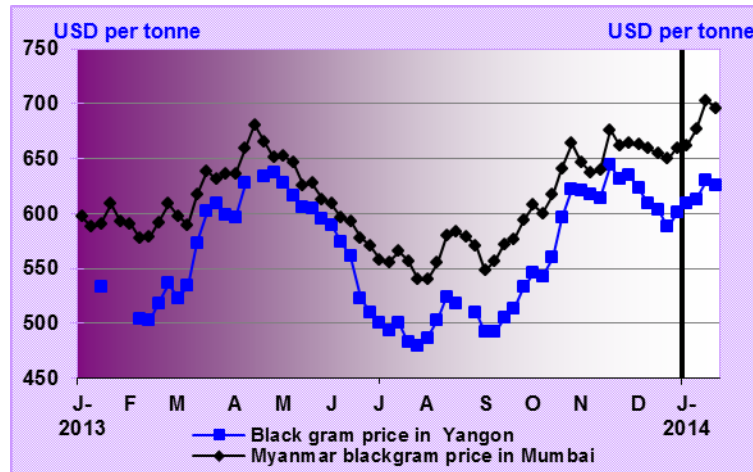
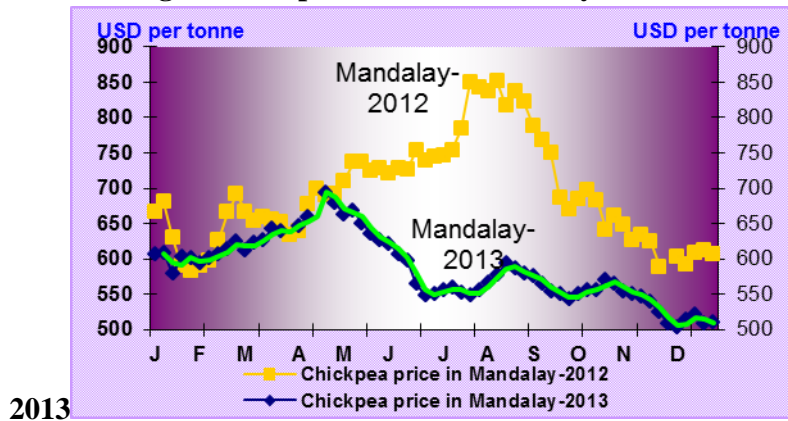
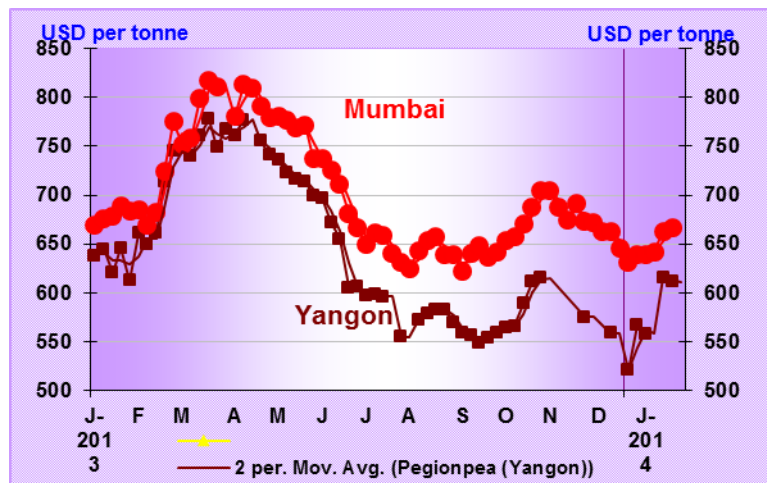


Fig 4 Chickpea Prices – Mandalay 2012-



Source: E-Trade, Yangon

Fig 5 Pigeon Pea Prices- Mumbai and Yangon



B.5 Value Chain for Oilseeds

Sesame and Groundnuts are the two principal oilseeds produced commercially in Myanmar; sunflower seed is also grown and is often processed at village level by farmers for domestic use. Sesame is mainly sown in the CDZ where it is mainly sown in the monsoon season (74%). These oilseeds are used domestically for oil production but have to compete with cheaper palm oil imports. Since both sesame and groundnuts are also used in confectionary there is also a large market for sesame and groundnuts which are exported unprocessed. Both sesame and groundnuts are shipped to Muse on the China Border and traded to Shweli (Ruili) for sale in China. In Yangon, roasted sesame powder is traded to South Korea. Exports of sesame in 2012-2013 were 136,000 tons valued at \$235.7 million or an average export price of \$1734 per ton. Because of the high prices and demand on export markets, virtually the whole sesame crop was exported in 2012-13. Groundnut exports in 2012-13 were 62, 370 tons valued at \$93.6 million at an average price of \$1500 per ton. Prior to 2011, there were restrictions on the export of sesame (excluding black and white) and sesame byproducts, groundnuts and locally produced oils but these restrictions were lifted in 2011. Palm oil imports were also opened up to the private sector.

Fig 6: Sesame export Prices 2012-2013

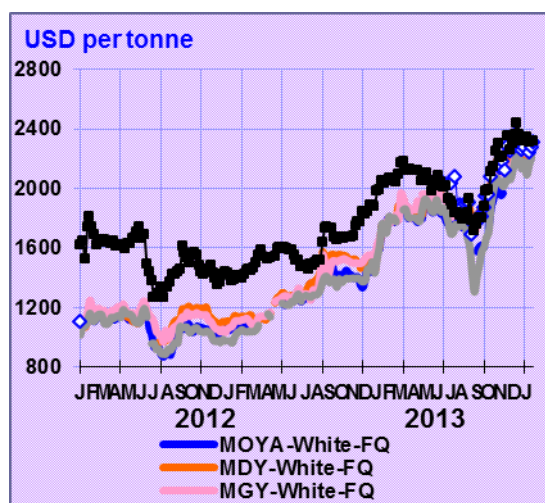


Fig 7: Oilseeds Value Chain in Myanmar

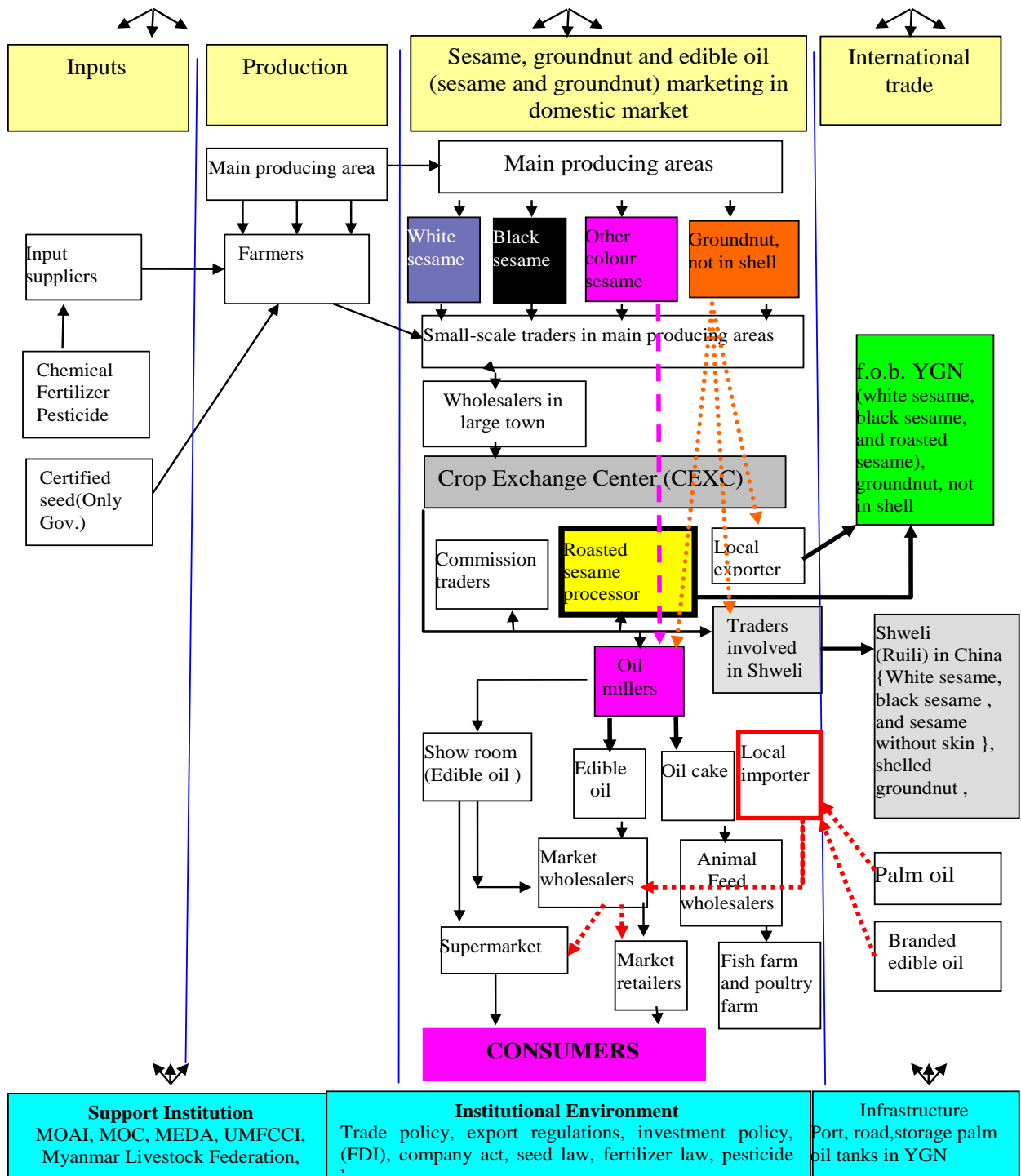
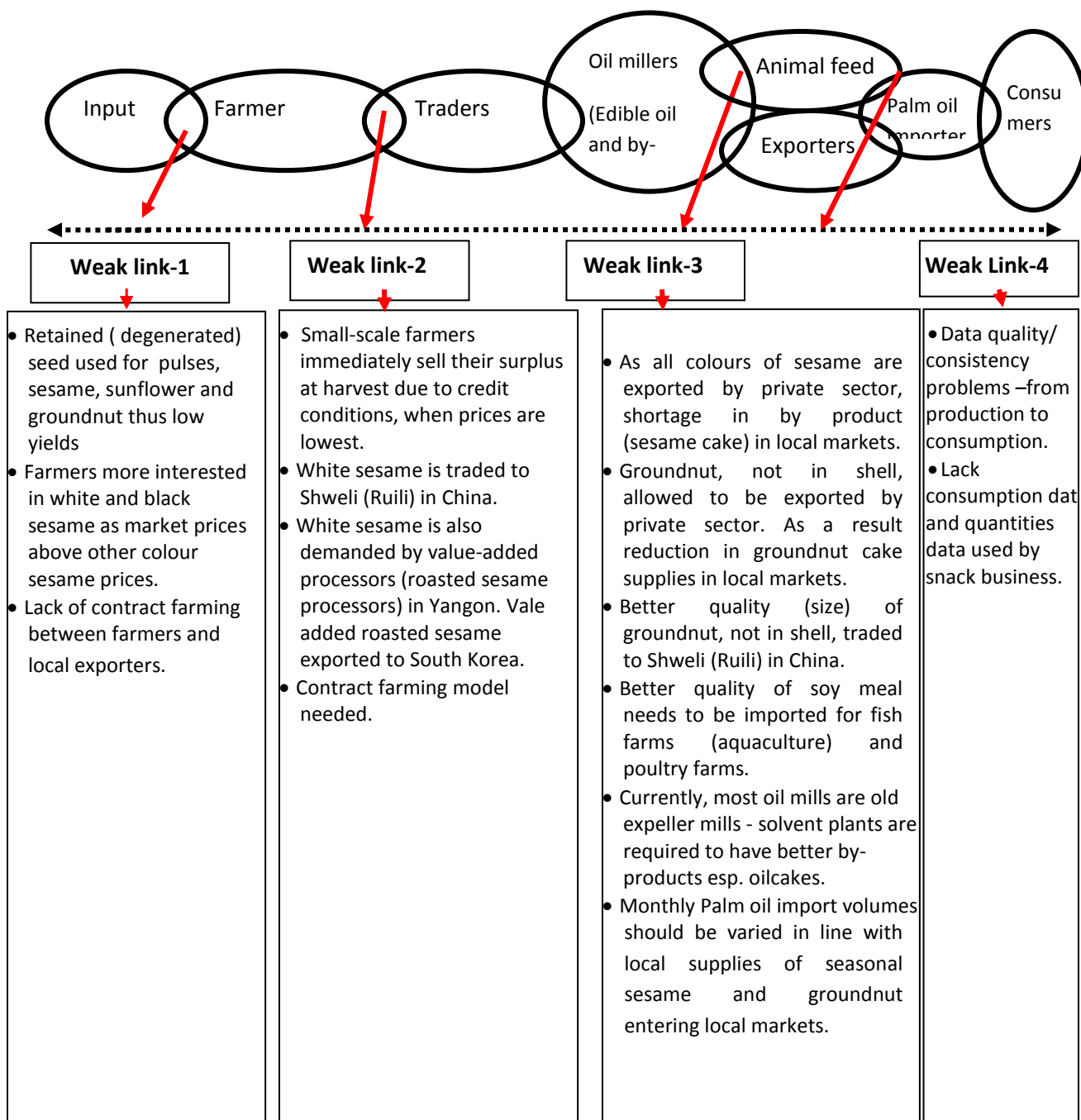


Fig 8: Weak links in the Myanmar Oilseeds and Palm Oil Value Chain



B.6 Value Chains for Goats, Sheep, Pigs and Poultry

6.1 Livestock and Livelihoods in CDZ

Though crop production is the major means of livelihood in the Central Dry Zone, cropping is often limited by unreliable and limited rainfall. Since most farmers have an average land holding of 3-5 acres or less, it is difficult to sustain livelihoods by only cropping and so many households also raise some livestock. The landless that number some 45% of households in the Dry Zone are the poorest and rely mostly on wage earnings as farming labour, as seasonal migrant workers and by keeping sheep and goats using common grazing land for feeding. For many landless households, sheep and goat herding for other farmers is an important source of income with income earned either as shepherds or through herd management contracts where the shepherds are entitled to some of the offspring of the flocks that they are looking after. Through this practice, these poor people can build up their own animal numbers.

Sales of sheep and goats, pigs and some poultry are at the villages with licensees or their agents buying directly from farmers. For religious- cultural reasons no animals are slaughtered on farm and are sold live to ‘licensees’ in the townships who undertake animal slaughter and meat sales. A significant number of goats in the two Districts, especially from Magway, are sold to traders for live export to China. Oxen and cattle are sold in weekly township animal markets e.g. Myingyan. No problems were seen in the selling of livestock by farmers. Poultry numbers in most villages is very small, with households having 2-5 birds which are most often sold locally.

6.2 Production – Goats, sheep, pigs and chicken

Farmers raise both male and female with castration on male goats commonly observed in all villages. Male goats are normally sold out for meat at the age of 8-10 months old or 7 months after castration. Common market size of a male goat is about 40-50 lb. (11-13 Viss) in weight. Female goats are reared for kids. Normally, a female goat can deliver 2 to 3 times per year under proper nutrition and good health condition. However, most farmers rarely get 2 kids per year due to frequent abortion of female goats. It may probably be caused by inbreeding and genetic diseases of local breeds. Female goats are sold out for meat normally at about 3-4 years of age, when reproduction fertility declines. Goats are one of the most profitable animals in the Dry Zone. There is a strong market demand for local consumption as well as for export and there are favourable natural and ecological conditions for goat farming with abundant grazing lands, especially in the drier Magway division. Goat farming provides job opportunities as shepherds for grazing animals for the landless poor.

The growing period of fattening pigs in the dry zone is a minimum 8 months to maximum 10 months depending on the breeds. Villagers sell their live animals according to their cash needs or when high prices are offered by the primary collectors. Weaning farmers in the local villages sell their piglets at about 45-60 days of age to other farmers for fattening.

Traditionally, chickens are sold out to the primary collectors at about 5 to 6 months old and about 0.65 -0.7 Viss /head in weight.

6.3 Goat, sheep, pig and native chicken marketing

Goat and sheep farmers normally sell their live animal to the village collectors who visit villages once or twice a week. Determination of price is based on live body weight of the animal. Another alternative of marketing goats and sheep are at weekly markets in the various township localities.

Farmers do not have any difficulty in selling their goats as there is always a constant demand for live goat and sheep. However, meat market demand is highest one month before Muslim religious days and farmers get the highest prices at these times.

Slaughtering of goats and sheep by farmers is very rare due to religious beliefs and because farmers can be sued or asked to pay penalty fees by the licensee who has the sole right to slaughter in the various township areas and surrounding villages.

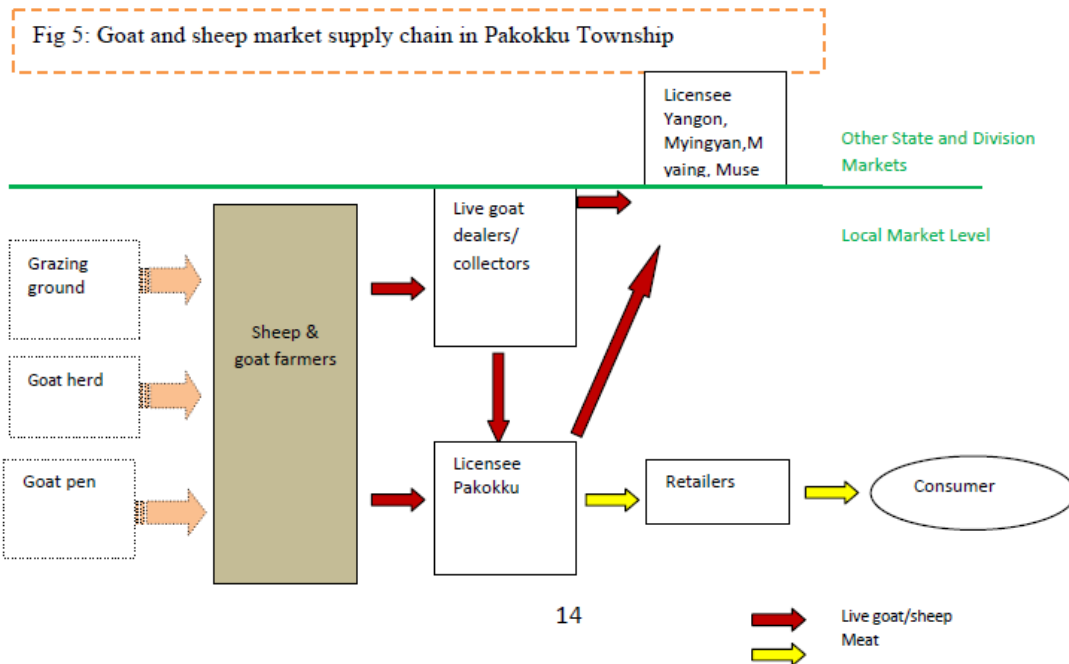
Primary collectors or the agents of local licensees visit the villages to buy the pigs on a live weight basis. There is a regular native chicken market in villages of the central dry zone. Most households sell out their chicken after 5 to 6 months, directly to end consumers in the villages in small numbers (1-2) at each sale. When they want to sell out the whole flock of chicken, they sell to the village collectors. Price determination is made by mutual negotiation.

B.7 STRUCTURE OF THE LIVESTOCK SUPPLY CHAINS

7.1 Goats and Sheep Supply Chain

In the supply chain of goats and sheep in the target areas, the key actors are Goats and Sheep Farmers, Live Goat/ Sheep Collectors (dealers), Licensees / Slaughters, Retailers, and the Consumers.

The structure of the goat and sheep supply chain (Supply Chain Map) at the local level is shown below:



In the supply chain of goats and sheep, slaughters and dealers are the important actors in the central dry zone. Dealers buy the live animals directly from the farmers or via the primary collectors and sell to the slaughter licensee. Sometimes they serve as the agent of the township local slaughter licensee.

Dealers take advance payment from the licensee and purchase herds of goats which they can keep in large numbers and sell according to slaughters' daily requirement. Slaughter license holders distribute meat to retail sellers at different fresh markets in the local area. Farmers sometimes sell directly to the licensee but they normally do not have a good links with the licensee slaughters.

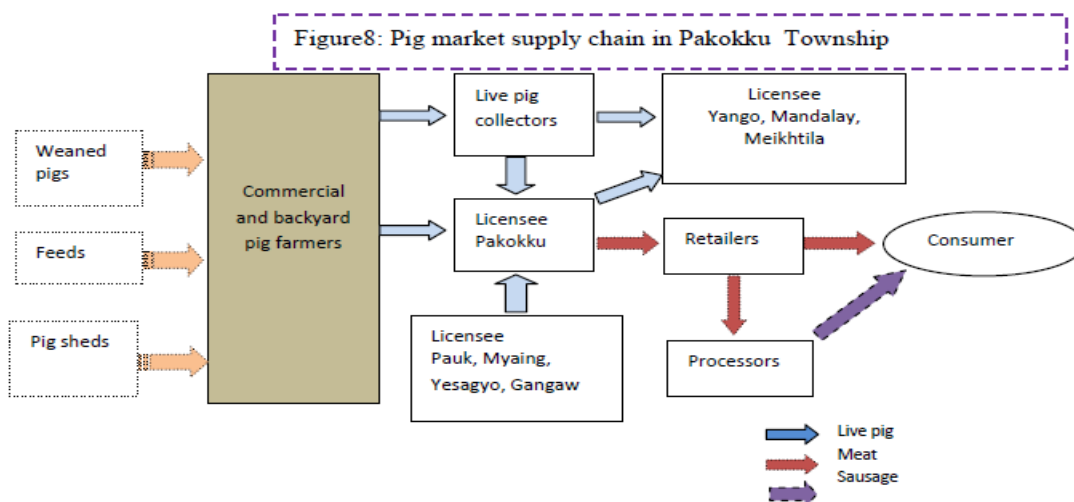
Occasionally, dealers and slaughter license holders sell the live animals to other state and divisional markets. Dealers and slaughter license holders from Magway and Minbu townships sell to Yangon and Meikhtila markets while dealers and slaughter licensee from Pakkoku sell to Myingyan and Myaing market for domestic consumption as well as to Yangon and also to Muse for export to China. Sometimes, dealers buy live animals for licensees in other regional markets and take agent fees. For example, some dealers in Magway and Minbu Townships are the agents of Yangon/ Meikhtila licensees. Similarly, dealers from Pakkoku Township are agents of Myingyan, Myaing or Muse licensees.

Normally, meat is consumed as daily fresh meat. In remote villages, animals are also slaughtered daily by sub-contractors of the main licensee. The sub-contractors have to pay monthly or yearly fees to the township licensee depending on the average number of animals slaughtered daily.

Township slaughter licensee holders have to pay very high annual license fees to the relevant township municipal committee. This slaughter license can be used for butchering of live animals in the township as well as for trading and movement of to and from other areas. To cover these high costs, slaughter licensees monopolize the relevant township's live animal market.

7.2 Pig Supply Chain

Pig raising is common among both landless households and land owners, providing households with additional income and as a “piggy bank”. There is a good live pig export market through border trade to China and Thailand and live pigs and fresh pork have a good local demand as well as high domestic market demand in densely populated states and regions such as Yangon, Mandalay, Shan, Mon and Karen. In the supply chain of pigs, the main actors are pig farmers, primary collectors/dealers, butchers and retailers. Among them, license holders/ butchers are the key actors along the supply chain.

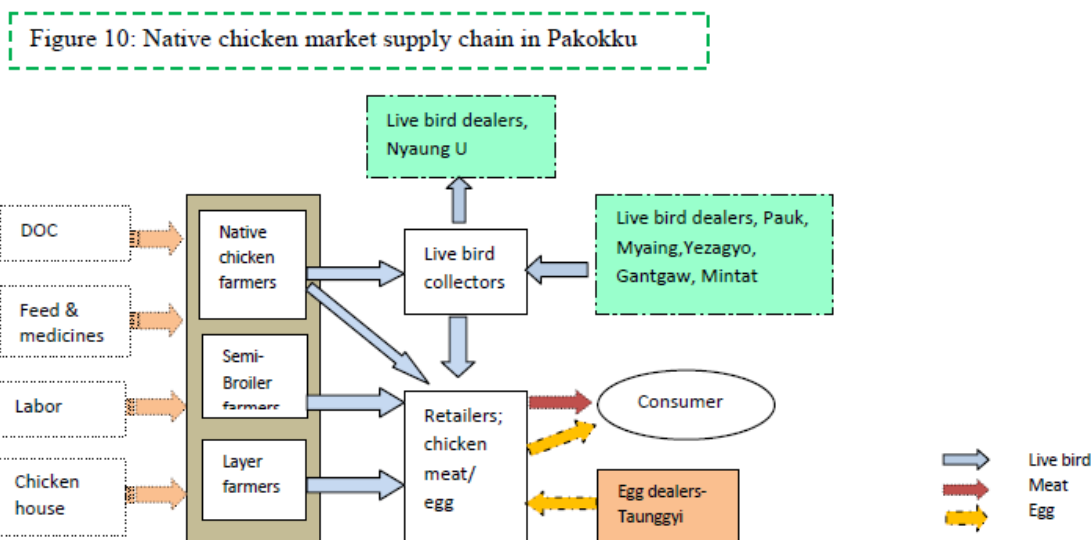


According to market demand, the dealers/ primary collectors usually take advance payment from the licensee. Dealers/ primary collectors buy pigs by visual estimation of carcass weight. The buying price of the dealers is normally set by the licensee and dealers sell to the licensee on the basis of live weight. In Pakokku, pig production is below market demand so live pigs are supplied from nearby townships such as Yesagy, Pauk, Gantgaw and Myaung townships within the same division. Processing (Sausage making) is only found in Pakokku Township.

Live pigs supplied from different townships are not only for local consumption but are also traded to Yangon, Mandalay and Meikhtila markets.

7.3 Native Chicken Supply Chain

All households can rear native chicken because of minimum husbandry requirements and prices in local markets are relatively higher than for hybrid broiler chickens as native chicken meat is much preferred by consumers because of its distinctive taste.



Village collectors play an important role at native chicken marketing. They go around the villages at frequent intervals to collect live chicken. Apart from collectors, processors or retailers also buy native chickens directly from the farmers and sell the carcasses at the daily fresh markets. There are about 30 retailers in Pakkoku urban area and the average number of chickens slaughtered for meat by each retailer is around 60 heads. In Nga Phaung Kan Village, which is 9 miles away from Pakkoku, there are about 25 processors and they slaughter about 600-800 heads per day for Pakkoku and Kanma markets. Due to its location, Pakkoku has become a popular market place for trading live chicken; collectors from Nayaung-U and other areas come and collect native chicken at Pakkoku while primary collectors from Yaw, Pauk, Yesagyo, Gantgaw and Myaing townships come and sell their live chicken at Pakkoku.

Native chicken is the only meat protein source which is readily available and affordable at any time for village consumers. Commercial layer production is affected by high temperature in the region and cannot meet the local demand or compete with the size and price of eggs supplied from Taunggyi.

C. Key Constraints and Opportunities

There has been a significant increase in the volumes and values of pulses and oilseeds produced in Myanmar in recent years. The marketing system functions competitively and farmers report few marketing problems. However, the profitability and competitiveness of these value chains in the CDZ are constrained by the increasing variability in yields (production) caused by unreliable weather and limited availability of improved, short duration drought resistant varieties. The Department of Agriculture has developed new, improved varieties of green gram, pigeon pea, black gram, groundnuts and sunflower but their availability is limited. Farmers are invariably using retained seed which in many cases has degenerated which severely impacts on the size, quality and yields of the different produce. The availability of improved and robust seeds will be a key determinant of future

crop profitability and competitiveness in overseas markets. Possibilities for value addition are limited as oilseeds and pulses are traded along the value chain as raw, unprocessed products. Grading and cleaning to export standards is done by the traders according to specific standards and cannot be done at village level more than is presently the case.

Inputs (seeds, fertilizers and animal health products such as vaccines) are in general short supply in most townships with only a few, small shops providing limited varieties and supplies to producers. Only horticulture inputs (seeds and chemicals) appeared to be readily available. The private sector is not involved in commercial seed production and supplies are seemingly dependent on what the government seed farms can supply. A study of input supplies and availability in Myanmar in general and especially in the Central Dry Zone with recommendations on how to improve the situation (including improved credit availability to stockists and to producers) is considered necessary in order to improve the situation.

Improving returns to farmers will be dependent on a number of factors. Group marketing is not practiced by farmers and whilst some traders would like to buy from groups, in order to reduce transaction costs, farmers prefer to undertake individual marketing. The benefits of group marketing in order to have a better negotiation position with traders and especially crop processors (oil millers and local pulse mills- chickpeas) as volumes offered will be greater, needs to be explained to farmers. If improved higher yielding sunflower varieties were to be planted then villages could eventually envisage establishing simple, manual oil presses to provide sunflower oil to village households and nearby villages. Procurement of inputs would also be cheaper if farmers bought together. The project envisages group training of Village Development Committee members and training in group marketing and procurement should be a part of the envisaged training.

Storage of crops to take advantage of seasonal price differences, which can exceed 30%, is not practiced in the villages because of the necessity to repay credit immediately after harvest. If the credit terms, duration and costs were to be modified then short term storage of crops to take account of seasonal price differences could be envisaged. However, crop volumes will require to be increased through better seeds and better husbandry before meaningful investments in domestic or village storage facilities could be envisaged.

Improvements that could be made in the marketing of livestock are limited. Improved sheep and goat production through better grazing herd management and animal health, especially in relation to improving kidding rates, could be envisaged. In order to improve the accuracy of weight estimation of small stock being sold to traders at village level, villages could invest in hanging scales so as to verify perceived animal weights and therefore prices payable on a live weight basis. Better feeding of pigs and better management could improve pig productivity and sales values. Poultry production has not been commercialized in the targeted villages and holds limited opportunities for villages that are distant from townships but improved poultry health would decrease bird mortality and therefore improve the financial attractiveness of keeping additional birds at household level from both an income and nutrition point of view. Disease control e.g. Newcastle disease, could markedly reduce mortality rates and allow for more birds to be marketed. Additionally, some feeding and placing birds in coops would improve live weight and therefore value of the birds and should be promoted.

D. Investment and Activity Options

There is very little scope as discussed above to warrant any significant investments in regard to marketing taking account of the limited production potential in most of the villages to be targeted. Programme activities should prioritize investments aimed at enhancing the production base viz. improved seeds, better animal husbandry and animal health management, improved access to water and securing increased and more reasonable access to production credit (amount, cost and duration). Only after production levels have increased and farmers have the possibility to engage in crop storage will investments in homestead or village level storage be justified.

Training of village development committee members in the benefits of group marketing and procurement (transport and inputs) should be instituted. This could be envisaged in Years 3 and 4 once a production response from the production enhancement interventions should have materialized: Group marketing Training- 100 VDCs per year @ 4 members@ 2 days (20 persons per course will necessitate 20 training sessions per year). Training is proposed to be undertaken at the OISCA Agriculture and Forestry Training Centre at Yesagyo and could be combined with other training such as improved poultry and animal husbandry and vegetable gardening. Estimated cost of each marketing training session is \$800 (\$20 per person – food, accommodation, transport and training costs).

Should production of sunflower seed be increased with the planting of new, improved varieties, consideration should be given to promoting village level sunflower oil pressing to meet the needs of the village itself and for sale to neighbouring villages. This would increase farm incomes and add value to the sunflower crop. Manual sunflower seed ram presses should be piloted and demonstrated in 10 villages per township area or 60 villages. The estimated cost of a sunflower press is \$ 2000 for a total of \$120,000.

There is some concern that farmers selling live pigs, sheep and goats that are sold on an estimated liveweight basis, are not receiving the right price due to inaccuracies in estimating the live weight of the animals by the buyer. This could be remedied by introducing animal weighing scales (hanging livestock scales) in the important livestock villages. This is recommended to be piloted in 50 villages per township or 300 villages in total. The estimated cost of the scales is \$70 each or \$21,000.

The limited availability of pulse and oilseeds and appropriate fertilisers in the CDZ is a limiting factor to improving crop productivity. It is recommended that a study be undertaken of input supplies in the country as a whole (local suppliers, importers, distributors, retailers, prices, trading terms and products available) paying specific attention to the input supply situation in the CDZ. The study should evaluate the existing situation nationally and in particular in the CDZ and identify constraints to the development of an expanded and more competitive input supply industry (seeds, fertilizers, agro chemicals and animal veterinary products) with greater involvement of the private sector. The study should propose appropriate policies and incentives to expand input supply and availability including financing and credit options to stockists and how to encourage increased private sector

involvement and competition in the input supply industry. The estimated cost of such a study is \$ 30,000.