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## **Value Chains for Livestock Products in Himalayan Mountains: Studies from Jammu and Kashmir**

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### ABSTRACT

This paper examines value chains for milk, mutton, wool and pashmina fibre in the mountainous state of Jammu and Kashmir using survey data collected from livestock producers, market functionaries including institutional and non-institutional buyers. Vendors dominate the milk market, but for dairy farmers selling milk to them is not as remunerative as to the institutional buyers. The state is deficit in mutton and imports almost half of its requirements from neighbouring states. Most of the wool produced in the state is exported. Butchers and traders of Ladakh are important market functionaries in market for pashmina fibre. The study has also identified institutional failures in livestock markets, and suggests strengthening integrated value chains for livestock products as to enable livestock producers capture benefits of expanding demand for livestock products.

**Keywords:** Livestock products, Value chains, Institutional failures, Jammu and Kashmir.

**JEL:** Q19, Q13, Q11, Q16

### I

### INTRODUCTION

The Himalayan Mountains are a unique ecosystem having varied crop and livestock production systems and therefore need special attention in studies on rural and agricultural economy (Jodha, 1993). The Indian state of Jammu and Kashmir represents such a characteristic of mountains. The state represents three major or ecological divisions namely the outer Himalayas (the Jammu region or sub-tropical zone), the lesser Himalayas (Kashmir region or the valley temperate zone) and the inner Himalayas (Ladakh region or cold-arid zone). Livestock serve an important source of livelihood for socially and economically backward communities such as *Gujars, Bakerwals, Chopans, Gaddies, Drokpas, Changpa and Paharies*. The state is home for different livestock species like non-descript hill cattle, goats, sheep, yaks, pashmina goats, double-humped camels and Zanskari horses (Wani *et al.*, 2004, 2007). The state is also known for its unique livestock products such as pashmina apparels, Kashmiri mutton cuisine - (*Wazewaan*) and traditional Kashmiri dairy desserts.

There has been a significant diversification of food basket in the state in the favour of animal products in the past two decades. The state being a tourist place

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offers ample scope for production and manufacturing of diversified livestock products and developing value chains. It offers some niche dairy products like Zanskari butter (purely organic), Zaffrani Pherni, besides a number of other livestock products. However, marketing of livestock and livestock products is mainly in the domain of informal sector comprising vendors, sweet-makers, butchers and itinerant traders (*Kotdaars*) who exploit livestock producers in more than one way. Urban consumers too are exploited in terms of higher prices and poor quality of products. To reverse these tendencies, it is essential to develop innovative value chains inclusive of smallholder livestock producers. In this paper we describe the status of markets for livestock products in Jammu and Kashmir and explore the possibilities of developing value chains for livestock products.

## II

### METHODOLOGY

The present paper is extracted from a project 'Prospects of Livestock Enterprise for Livelihood Security in Jammu and Kashmir' sponsored by the University Grants Commission and was conducted during 2008-2011. To select the livestock producers, a multi-stage stratified random sampling procedure was adopted. Based on the density of livestock population, one district from each region, i.e., Jammu from the sub-tropical zone, Pulwama from the valley temperate zone and Leh from the cold arid zone was selected. Then from each sampled district two blocks and 100 livestock owning households each were randomly selected. Thus, our sample comprised of 300 households. The information on marketing of livestock was collected from these households. Besides, many market functionaries and processors were also interviewed.

## III

### RESULTS AND DISCUSSION

#### *Value Chain for Milk*

Livestock production system in the sub-tropical Jammu region is extensive with buffaloes, crossbred cows (Jersey and Holstein Friesian) and non-descript local cows as main species. In the temperate Kashmir valley livestock production is intensive mainly based on crossbred cattle, while in the cold-arid Ladakh region it is intensive for large ruminants (crossbred cows and yak) and extensive for sheep and goats (Taneja, 2010; Wani *et al.*, 2011).

Dairying is the largest component of livestock economy of the state. Stagnating until 1970s, the milk production in the state started rising in the 1980s. It increased from 340 thousand tonnes in 1984-85 to 1565 thousand tonnes in 2008-2009 and is likely to cross 1600 thousand tonnes in 2014-15 (Table 1). The sub-tropical and

temperate regions contribute almost equally (approximately 48 per cent) to the total milk production in the state. In fact, the contribution of sub-tropical region has progressively declined to 47 per cent in 2008-09 from 52 per cent in 1994-95, while the temperate region consolidated its share to 49 per cent. Crossbred cows contribute 57 per cent to the total milk production followed by buffaloes (19 per cent), local cows (18 per cent) and goats (6 per cent). Buffalo is the main milch species in the sub-tropical region; crossbred cow in the temperate valley; and local cow and yak in the cold-arid region.

TABLE 1. TREND AND GROWTH IN LIVESTOCK OUTPUT IN JAMMU AND KASHMIR

Livestock products (1)	Years					CAGR (per cent) (7)
	1994 (2)	1999 (3)	2004 (4)	2009 (5)	2014 (6)	
	Kashmir Region					
Milk (000 tonnes)	293.90	558.20	679.38	765.08	1178.97	5.66
Meat (lac kgs)	N.A.	N.A.	113.41	126.8	142.50	2.56
Wool (lac kgs)	17.97	23.73	30.23	33.78	46.37	4.78
Pashmina fibre (tonnes)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	Ladakh Region					
Milk (000 tonnes)	31.12	31.12	51.58	60.01	81.53	5.49
Meat (lac kgs)	N.A.	N.A.	17.82	21.31	25.35	4.22
Wool (lac kgs)	2.82	2.93	2.35	2.6	2.37	-1.06
Pashmina fibre (tonnes)	32.0	32.65	48.0	40.0	41.50	3.70
	Jammu Region					
Milk (000 tonnes)	347.45	642.60	652.66	739.47	962.28	3.28
Meat (lac kgs)	N.A.	N.A.	110.29	129.9	151.98	3.78
Wool (lac kgs)	20.63	27.74	30.51	34.97	45.53	3.75
Pashmina fibre (tonnes)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	Jammu and Kashmir					
Milk (000 tonnes)	678.24	1231.9	1383.6	1564.6	2199.97	4.43
Meat (lac kgs)	N.A.	N.A.	241.52	278	319.83	3.24
Wool (lac kgs)	41.42	54.4	63.09	71.35	93.58	3.98
Pashmina fibre (tonnes)	32.0	32.65	48.0	40.0	41.50	3.70

Source: Integrated Sample Survey on Estimation of Major Livestock Products in J & K (various issues).

Dairying seems to be commercial activity in the temperate and sub-tropical regions, where 80 per cent and 69 per cent of the households respectively sell milk as compared to 29 per cent in the cold arid zone. The milk is sold to various market functionaries that are vendors, milk shops and co-operatives. Vendors are prominent buyers in the sub-tropical and temperate regions, while in the cold arid region producers sell milk directly to the consumers (Table 2). Producers captured a higher price when it is sold to dairy co-operatives. However, co-operatives as a significant functionary in milk trade is either too weak or missing.

There are four major institutional players in the milk market in the state. The Jammu and Kashmir Milk Producers Co-operative Limited (JKMPCL) is the oldest organisation with two milk plants one at Srinagar and another at Jammu. These plants process and market pasteurised liquid milk with 'Snowcap' brand. Recently, JKMPCL has started marketing of curd and flavoured milk. Another important

market player is the Khyber Agro Farms Ltd. having pasteurisation capacity of one lakh litres per day. The operational base of Khyber brand pasteurised milk and curd is in the temperate Kashmir valley. *Zum Zum* Milk Products Pvt. Ltd. is another private player with milk plant in Kashmir, and has recently entered into the packaged segment. The procurement system by co-operative milk plants is through dairy co-operative societies while as, private milk plants procure through chain of local wholesalers and also import from Punjab.

In the sub-tropical Jammu region, JK Dairy Processing Co-operative Ltd. is also an important institutional player in the milk market. Its pasteurised milk is marketed with Surya brand (Table 3). Besides, it also supplies a considerable quantity of milk to the armed forces located in the region. The profit margins for the processing sector appear to be attractive, indicating a scope for private sector participation in milk markets. Presently, only about 25 per cent of the milk produced in the state finds way to markets, while the marketable surplus is much more as is implied in the higher proportion of households selling milk. An important problem is that milk production is scattered on hilly terrains with long distances from the main consumption centres.

The organised sector supplies 34 thousand tonnes of milk to the two capital cities, viz., Jammu and Srinagar which is sufficient to meet only about 30 per cent of the nutritional requirement of the populations of the two cities. This indicates that there exists a wide gap between demand and supply. Presently, the state procures 11 thousand litres branded milk (Verka) and 51 thousand litres raw milk from Punjab. This calls for strengthening of supply chains and infrastructure for procurement, processing and distribution in hitherto virgin milk sheds of the state.

#### *Value Chain for Meat*

The meat production system in sub-tropical Jammu region is mainly extensive with Rambouillet, Bakerwal cross, *Punchi*, *Kaghani* and Beetal breeds of small ruminants. In the temperate region it revolves around Kashmir merino, *Gurezi* and *Karnah* breeds of sheep reared under semi-intensive system. In the cold-arid region of Ladakh the production system is semi-intensive for sheep and extensive for *Changthangi* Pashmina goat and *Changluk* sheep.

A majority of the population in the state irrespective of culture, religion and location are traditional consumers of meat. Recent estimates of mutton consumption (red meat) suggests a total consumption of 560 lakh kg in 2009-2010, of which about two-third is met from domestic production, and the rest is met from imports of live sheep for the purpose from other states. The state produced 438 lakh kgs of poultry meat (white meat) and 510 million eggs, much below its requirement; 46 per cent for poultry meat and 31 per cent for eggs. The deficit is met from imports. An amount of around Rs 2000 crores is incurred annually towards import of meat and eggs etc. If this amount is invested into developing value chain in the state, it would change the complexion of the livestock economy.



Meat production increased from 242 lakh kgs in 2004-05 to 278 lakh kgs in 2008-09. More than three-fourths of total meat from sheep and goat and the rest is accounted for by poultry meat. Spatially, about half of the meat production comes from sub-tropical Jammu region, 40 per cent from temperate Kashmir region and rest from cold-arid Ladakh. By species, crossbred sheep contributed 60 per cent, local sheep 15 per cent and goats 25 per cent to total red meat production. Per capita meat availability is about 2.5 kgs per annum. The agro-climatic and geophysical conditions of the state confer a distinct advantage of developing small ruminant production system. Nonetheless markets for live animals are unorganised exploitative because of monopsony of traders (*Kotdaars*). Jammu and Kashmir imports meat from markets in neighbouring states. Important channels identified for marketing of live animals within and outside the state are:

For imported meat:

Channel-I: Important markets of Delhi, Amritsar/Rajasthan/Haryana (*bakri market*)  
→ Traders (*Kotdaars*) → Butchers → Consumers/ Restaurants

For domestic meat:

Channel-II: Producer → Traders (*Kotdaars*) → Butchers → Consumers/  
Restaurants

Channel-III: Producer → Butchers → Consumers/ Restaurants

Kashmir serves the choicest selection of non-vegetarian food in multiple flavours. The traditional form of cooking known as '*Wazwan*' is mostly for the non-vegetarian dishes. The gourmet's delight, '*Wazwan*' is the ultimate name in Kashmir banquet. This royal cuisine of Kashmir has been influenced by Iranian, Afghan and Central Asian styles of cooking. Eight dishes that typically form an inseparable part of the feast - '*Kabab, tabakh maaz, rogan josh, rista, aab gosh, dhaniwal korma, mirchi korma and ghustaba*' conjure delicacies that are rich in taste, texture and aroma. With modernisation the need is felt to improve shelf life of the mutton based cuisines and make them available in the retail markets in ready-to-serve form. This lead some of the traditional '*wazas*' or chefs to think and now there are quite a few entrepreneurs who have invested in processing of mutton into diversified traditional products with scientific packaging of various sizes.

We interviewed three entrepreneurs (Ahadsons Foods, Hyacinth Agro Products Ltd. and Saffron Valley Pride) who process mutton into value added products and sell these with their own brands with packing of half and one kilogram. Wholesale prices of various value added products are given in Table 4. The capital investment for a unit is about Rs. 29 lakhs. The products are supplied to organised retail outlets in Srinagar and Jammu and also in Ladakh. About two-third of the total processed output is sold within the state and the rest is exported mainly to Delhi, Mumbai and occasionally outside the country mainly to United Arab Emirates.

TABLE 4. PRODUCTS AND PRICES OF PROCESSED MUTTON PRODUCTS

Product/Brand (1)	(Rs.)			
	1 kg packing		½ kg packing	
	WSP (2)	MRP (3)	WSP (4)	MRP (5)
Resta	750	800	375	400
Goshtaba	750	800	375	400
Lehbi kabab	750	800	375	400
Tomato kofta	750	800	375	400
Mirchi korma	750	800	375	400
Rogan josh	750	800	375	400
Palak rista	700	750	350	375
Hirsa white	700	800	350	400
Mirchi meat	750	800	375	400

Source: Field survey (2011).

#### Value Chain for Wool and Pashmina

Local Kashmiri wool was earlier used for manufacturing of Namdas and blankets. Merino and Rambouillet fine wool breeds were used to upgrade the local sheep in the early 1960s. As a result, Kashmir merino breed was evolved with wool quality comparable to the best wool in the world (Taneja, 2010). The data presented in Table 1 shows that in the past 15 years wool production in the state increased at a rate of about 4 per cent a year from 41.42 lakh kgs in 1994 -95 to 71.35 lakh kgs in 2008-09. The growth has been higher for wool from crossbred sheep while it was negative for wool (local sheep). The crossbred sheep now accounts for 80 per cent of the total wool produced in the state. These patterns of growth are not much different for sub-tropical and temperate regions. While wool production in cold-arid Ladakh region declined at an annual rate of 0.58 per cent. Two important channels have been identified for wool trade.

Channel-I: Producer → Wool Dealer → Processing Industry of Punjab

Channel-II: Producer → Wool Board → Processing Industry of state

Marketing of pashmina involves considerable risk because of its form, affordability, availability, convertibility, alternate uses and high price sensitivity besides its cross border trade with Tibet and China. Pashmina, a novelty of the region, invites attention of the luxury segment of the market, but at the same time its trade is highly exploitative. With urbanisation market demand for pashmina products of Kashmir has expanded considerably. This growing demand in the domestic as well as international markets provided a basis to extend incentives to pashmina farmers to increasingly engage in pashmina production and trade. Unfortunately a large presence of intermediaries in the distribution channels of raw pashmina and value addition does not lead much increase in their share in consumer rupee.

The main functionaries in marketing and trade of Pashmina products include butchers from Leh, traders from Leh and Himachal Pradesh, local agents of Changthang and Jammu and Kashmir Wool Board, All Changthang Pashmina



Growers Co-operative Marketing Society Limited, Tibetan Refugees Service Co-operative and Department of Handicrafts and Industrial Co-operative Society. Four major channels were observed in marketing of pashmina.

- Channel I: Producer → butcher → wholesalers (Srinagar)  
 Channel II: Producers → Village local agents → Traders from Leh → Wholesalers from Srinagar/Himachal Pradesh/Delhi/Punjab/cross border trade  
 Channel III: Producers → All Changthang Pashmina Growers Co-operative Marketing Society → Pashmina Dehairing and Processing Plant Leh → Traders from Chandigarh/Punjab/Delhi/Srinagar/other Government and co-operative agencies  
 Channel IV: Producers → Tibetan refugees and others → Cross border trade, etc.

Table 5 presents flow of pashmina through various channels in Changthang. About 44 per cent of pashmina flows through Channel-II, followed by Channel-I (35 per cent), Channel-II and Channel-IV. Bulk of the pashmina finally reaches Kashmir valley and some to Himachal Pradesh. Private traders (Channel-II) offer higher compared to other buyers including institutional buyers. The best pashmina finds way to Kashmir and the inferior to Himachal Pradesh and other northern states. All Changthang Pashmina Growers Co-operative Marketing Society Limited has primary marketing societies functioning in 22 revenue villages of Changthang (breeding tract of Changthangi pashmina goats). A pashmina processing (de-hairing and cleaning) facility is available with the apex co-operative society. Now the society is planning spinning and weaving of pashmina in cottage industries, handicrafts and co-operative centres. Traders from Kashmir obtain hardly 20 per cent of their requirement from Ladakh and import it from other parts of the state. However, it may be mentioned here that it is the skill of Kashmiri artisans that practically creates demand for pashmina. Tibetan refugees besides being engaged in pashmina husbandry have strong purchasing power to alarm the local traders who have social ties with Tibet and engage in barter of pashmina with Chinese traders for electronic goods, silk garments and velvet.

TABLE 5. QUANTUM OF SALE THROUGH VARIOUS CHANNELS INVOLVED IN MARKETING OF PASHMINA

Particulars (1)	Channels of distribution				Total sale/ avg. (6)
	I (2)	II (3)	III (4)	IV (5)	
Quantity of pashmina handled by the channel (kg)	14500	18000	7000	1500	41000
Price paid by agency (Rs./kg)	1600	1650	1500	1500	1600
Agencies preferred by Changpa (per cent)	45	35	10	10	100

Source: Field survey (2007).

Three types of shawls/stoles are weaved from hand-spun pashmina (i) ladies shawl with 80" x 40" dimensions, have very high demand in India; (ii) rumal (square shawl) of 60" x 60" dimension mainly for export to countries of Persian Gulf for as

turban; and (iii) stole for domestic and export to USA, Japan, European Union, Australia, New Zealand, Korea and Singapore. The weaving cost (*Nawardh* charges) varies from Rs. 700 to Rs. 800 for plain, and Rs. 1000 to Rs. 1500 for multi-coloured shawl and stole. The cost of production to a wholesaler generally is in range of Rs. 2950 to Rs. 4800 for plain and multi-coloured shawl and stole (Table 6).

TABLE 6. COST STRUCTURE IN WEAVING AND EMBROIDERY WORK IN VARIOUS PASHMINA SHAWLS

Particulars (1)	Shawl (ladies) (2)	Square shawl (3)	Stole (4)
(A) Quantity of processed pashmina used (g)	200	225	150
Cost of processed pashmina (Rs.)	2800	3150	2100
Weaving charges (Rs.)			
(plain)	750	800	700
(with dye)	1200	1500	1000
Purzgar charges	75	75	75
Dry cleaning charges	60	75	75
Wholesale production cost			
(Plain)	3685	4100	2950
(Dyed)	4135	4800	3250
(B) Embroidery charges (Rs./piece)			
Hashidar/Beldar	2500(3500)	-	2200(3000)
Neemdor	3500(4500)	3800 (4700)	-
Doredor	5000(6300)	5500 (7500)	5500 (7500)
Jall	6000(7500)	-	12000(14000)
Jamawar	18000(20000)		38000(50000)
Dry cleaning charges (final)	100	100	100

Source: Field survey (2007).

Figures in parentheses indicate use of silk thread for embroidery work.

## V

### LESSONS AND POLICY IMPLICATIONS

The state of Jammu and Kashmir incurs about Rs. 2000 crores annually towards imports of livestock products. If this amount is utilised to develop value chains it would benefit millions of livestock producers and provide an impetus to the state's livestock economy. However, without a clear understanding of the institutional framework for strengthening value chain may not succeed to enhance domestic supplies of livestock products.

Milk distribution system is traditional and exploitative with organised sector handling only 5 per cent of the marketed surplus of milk. Integration of dairying with processing/ value-addition has ample scope and can boost milk production, increase income and employment to producers and ensure regular supply of quality milk and its products at reasonable prices to urban consumers. The government besides strengthening dairy cooperatives particularly in difficult terrains should encourage private investment in value chains. Fresh milk in the temperate region is in high demand; hence should be targeted towards improving supplies of fresh milk through a well regulated chain of vendors. The net revenue realisation per litre of packaged liquid milk is quite attractive indicating a scope for private investment in dairy value

chains. The feed is binding constraint and the government should focus on enhancing feed production. Limited investment in setting up or expansion of milk procurement network is another bottleneck to include smallholder in value chain. Increasing demand for mutton demand many fold increase in reproduction of small ruminants. For the next 10 years to achieve a balance between demand and supply domestically, the target growth in small ruminant population is estimated to be around 10 per cent per annum. Markets for live animals are largely unorganised and highly exploitative. Bulk of trade in small ruminants takes place between producers and itinerant traders which exploit both producers and butchers. Establishment of terminal markets/focal points for livestock products is essential for competition and for benefit of producers and consumers.

Innovative value addition of wool and pashmina can strengthen livelihood of producers and artisans. Keeping in view the skill of artisans of Kashmir, there is a need for their capacity building considering the consumer preferences in the domestic and international markets. Illegal cross border trade demands regulation as it jeopardises livelihood of both *Changpa* and traders. Support price for various grades of pashmina may be fixed. Efforts should also be made to discipline various market functionaries involved in fibre trade.

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