

Goat Value Chain Analysis in three Indian States – Bihar, Odisha and Uttar Pradesh



Report submitted by
Intercooperation Social Development India

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Abbreviations

| | |
|--------|---|
| APEDA | Agricultural Processed Food Products Export Development Authority |
| AHD | Animal Husbandry Department |
| AHD&F | Department of Animal Husbandry, Dairying and Fisheries |
| ASCAD | Assistance to State for Control of Animal Diseases |
| CAHWS | Community Based Animal Health Workers |
| CIRG | Central Institute for Research on Goats |
| FMD | Foot and Mouth Disease |
| FYP | Five Year Plan |
| NGO | Non-Government Organization |
| GDP | Gross Domestic Product |
| HH | House Holds |
| GoI | Government of India |
| IFAD | International Fund for Agricultural Development |
| MP | Madhya Pradesh |
| NABARD | National Bank for Agriculture and Rural Development |
| NLM | National Livestock Mission |
| NMPS | National Mission for Protein Supplementation |
| NRLM | National Rural Livelihood Mission |
| NSSO | National Sample Survey Organization |
| PPR | Peste des Pettis Ruminants |
| SC | Scheduled Caste |
| SHG | Self Help Group |
| ST | Scheduled Tribe |
| UP | Uttar Pradesh |
| VCI | Veterinary Council of India |

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**Intercooperation Social Development
Hyderabad**

Executive Summary

Introduction

International Fund for Agricultural Development (IFAD) mandated Intercooperation Social Development to conduct goat value chain analysis. The objectives of the analysis are to:

- Identify areas of interventions in value chain in goat production and goat products in three
- Indian States i.e. Bihar, Odisha and Uttar Pradesh (UP).
- Propose specific recommendations to improve the goat value chain in the three Indian States under the study with reference to small-holder House Holds (HH) and the players involved in slaughters and retail meat sales.

Goat Production

India with 135 million goat population ranks second in the world in goat meat production and its Gross Domestic Product (GDP) value is Rs. 386 billion. Economically weak and socially backward communities keep goat as subsistence.

The goat production system in the country is categorized as Extensive Grazing (predominant in Odisha), Tethering (Parts of Bihar and Eastern UP), Semi-Intensive Production and Intensive Production Systems. Women perform major activities in goat keeping while men play key role in marketing.

Primary source of goat nutrition is through extensive grazing/browsing with zero to marginal supplements at homes. In addition, some of the challenges in goat feeding include shortage of crop residue with change in pulse cropping and stringent forest regulations.

High mortality, especially of kids (up to 40%) due to diseases like *Peste des Pettis Ruminants* (PPR), Foot and Mouth Disease (FMD) and poor management are major challenges in the goat sub-sector. Despite the Government of India (GoI) initiatives, the estimated annual loss on account of PPR was Rs. 1204 billion in small ruminants and Rs.23.19 billion due to FMD (large ruminants and small ruminants put together).

Non-availability of quality breeding stock is another major challenge resulting in low productivity. The National Livestock Mission (NLM) programme of the Government of India promotes small ruminant development initiatives by using the platforms of women's Self Help Groups (SHG) and also other cooperative structures.

Processing

Live goat is the principal product that provides income to goat-rearing families. Income from milk has limited potential due to low productivity hence fed to kids. Chevon (goat meat) is the principal product bringing income to households where as skin, different edible and non-edible products, despite their high value do not benefit the goat-rearing families.

India being second largest goat meat producer has increased meat production from 0.47 to 0.596 million tons between 2002 and 2011 recording an annual growth rate of 2.4%.

In spite of significant increase in meat production, due to lack of organized production and marketing structure India is not able to improve its export earnings compared to the developed countries. However, there is a gradual increase in demand for processed meat products in the urban and peri-urban domestic markets specially value added products like mutton kebabs, dried meat, nuggets, sausages, smoked mutton ham, mutton bites biryani etc.

The organized development of processed meat is important to realize full benefits from the goat meat sub-sector and contribute for sustainable meat production. The growth of processed meat sector assures the farmers a regular lift of their produce at reasonable prices. Effective utilization of by-products from the slaughterhouses also will contribute to the value addition of goat meat sub-sector.

Meat production is unhygienic mainly because of open slaughter by butchers. Slaughter houses in general are in extremely poor condition with insufficient infrastructure and poor maintenance. Butchers lack skills on hygienic meat production and workers are not medically examined at scheduled frequency.

Twenty-five export-oriented modern abattoirs are registered with the Agricultural Processed Food Products Export Development Authority (*APEDA*-Ministry of Commerce) for exporting meat.

Leather is the most important by-product in the meat industry. Goat skins collected from butchers are supplied to tanneries. Details of skin are not discussed here much since it does not contribute to goat-rearing families.

Marketing

Goats are collected from the farm gate to livestock markets by primary traders who sell them to butchers/secondary traders. The secondary traders collect goats from local *mandies* (markets) and send to end-markets. Most of the markets are managed by market committees/municipalities/private agencies with no veterinary health facilities, fodder and fresh water for animals and shelter for stay.

Costs, margins and incomes at each value chain actor-level is calculated from the field and presented below. In Odisha value chain actors comprised producers, primary traders, secondary traders and butchers (urban and rural). At the producer-level annual sales are 10 goats with an annual net income of Rs.1100 after monetizing the labour cost and cost of the bucks borne at home. Labour and cost of the bucks if not monetized, the annual income is Rs.38, 000. Primary traders, secondary traders, small butchers and urban butchers handle annually 500, 2000, 450 and 700 goats respectively with an annual net income of Rs.64 500, Rs.100,000, Rs.144,000 and Rs.231,000 respectively.

In Bihar, at the producer-level, annual sales are seven goats with an annual net income of Rs.1260 after monetizing the labour cost and cost of the bucks borne at home. Labour and cost of the bucks if not monetized, the annual income is Rs. 22,260. Primary traders, secondary traders, small butchers and urban butchers handle annually 450, 1500, 300 and 500 goats respectively with an annual net income of Rs. 76,500, Rs.75,000, Rs.96,000 and Rs.107,500 respectively.

In Uttar Pradesh, producer-level annual sales are 10 goats with an annual net income of Rs.1750 after monetizing the labour cost and cost of the bucks borne at home. Labour and cost of the bucks if not monetized, the annual income is Rs.25, 750. Primary traders, secondary traders, small butchers and urban butchers handle annually 500, 2000, 450 and 700 goats respectively with an annual net income of Rs. 33,000, Rs.100,000, Rs.119,250 and Rs.198,100 respectively.

Export Market

The Indian processed meat exports reached 23,611.55 tons (2014-'15) accounting for a value of Rs.82811 million¹. This is meager (6.5%) of the total world exports of goat and sheep meat (by weight) and an even smaller 3.7% in terms of value.

Issues that Need Attention for an Enabling Environment

Non-availability of timely health services from service providers is adversely impacting productivity. Adequate credit is not flowing into the sector despite the Government efforts of providing an outlay of Rs1900 million (only 5% was spent). Insurance is nearly absent as goat-rearing families do not opt for it due to exhaustive list of exclusions indicated in the policy. National Livestock Policy 2013 and National Livestock Mission 2014 are skewed towards large bovines with little focus on small ruminants. All minor veterinary services to be rendered by Para-Veterinarians are to be notified by the State Governments. Only 15 Indian States (Odisha is included) have notified the Para-veterinarian services.

Recommendations

Following are the recommendations across the value chain:

a. Production

- Either at household level or commercial farms the major focus should be to reduce mortality to 10% from the current high mortality by conducting timely vaccinations, de-worming by increasing number of Community Animal Health Workers (CAHWS): Common to all three States
- Promote commercial goat farming on semi-intensive/intensive production system by supporting for stocks, breeding buck, shelter, feed, services like: Credit, health, skill development, insurance, contractual agreement with the federation for supply of breeding bucks and does; (in three States)
- Promote broiler goat farms on an experimental basis by providing infrastructure, technology transfer, credit, insurance, training, information etc. in Uttar Pradesh
- Promote goat-rearing families by organizing them into collectives and support them with forward and backward linkages (common to three States)
- Organize 2000 small and medium goat-rearing families into a collective interested in supplying goats to market (common to three states)
- Support the collectives by providing breeding bucks, preventive health support, services of CAHWS, business plan development, knowledge and skills and, goat aggregation, community insurance and credit and marketing (common to three states)

¹ APEDA Source: Suresh et al, 2012, India's meat export :Structure, composition and future prospects, Indian Journal of Animal Sciences82 (7): 749–756, July 2012 and http://agriexchange.apeda.gov.in/indexp/Product_description_32head.aspx?gcode=0402

- Production of quality breeding bucks by promoting private goat breeding farms (three States) by supporting Infrastructure, stocks, feed, credit, training, business plan development, insurance, and marketing. Distribute good quality bucks on loan in limited area.
- b. Processing**
- To work with Municipalities to improve hygienic meat and comply with Food Safety and Standards Authority of India (FSSAI) by modernizing meat stalls in select locations with debt equity and technology transfer, establishing private slaughter houses in select locations and supporting in products development, market testing and promotion.
- c. Marketing**
- Reduce transaction losses on live goat sales by Strengthening *mandis* , *mandi* protocols and intra-*mandi* information on prices, develop contractual agreement with seller, buyer and banker through collective and breed certification and branding (Black Bengal specific to Odisha).
- d. Export Market**
- To increase the current 12% export potential of goat meat to 20% by increasing meat processing facilities, production of value added products and simplifying meat certification process through a single window.
- e. Enabling environment**
- Uttar Pradesh and Bihar States are yet to notify Minor Veterinary Services. There is a need to develop an organic link between CAHWs and Animal Husbandry Department (AHD) and allied schemes and projects in all the three States including developing protocols, standards, curricula and training procedures to CAHWs, licensing and strengthening of training infrastructure in livestock sector in all the three States. In Bihar, it is essential to promote private players in establishing Veterinary Diagnostic Centers, vaccine delivery and cold chain management under agri-entrepreneurships.
- f. Investment opportunities**
- Considering the current growth of goat sector, and the Government of India (GoI) policy on 100% FDI in food processing industry with allocation of funds and investment opportunities in goat sector on a PPP model is encouraging.

Way forward

With the current limitations in extensive goat production system, transformation in goat sector is essential and the following ideas are proposed in this regard:

- An exclusive goat policy at the national level supported by State-level strategic implementation plan for goats is essential
- Aligning small-holders into clusters and provide support with feeding technologies, reproductive technologies and strategic preventive health support system
- The goat-rearing families from small and medium categories need to be aligned and promoted as semi-intensive producers with latest technical and scientific methods
- Promoting large scale commercial goat breeders on commercial scale
- Promoting goat farmer schools and developing a strong army of farmer-centric extension mechanism
- Promoting broiler goat farming for export and urban markets on contract farming basis.
- Promoting a national goat development board by an Act of Parliament to consolidate, coordinate and promote goat industry.

1. Introduction

Livestock contributes to combating protein hunger world over through milk, meat and eggs, besides its enormous share in soil nutrition and crop production.

In India due to different structural changes and land use pattern, non-food functions of livestock are under transformation to cope up with the increasing share of milk, meat and allied value added products in the human food basket. Between 1983 and 2004, the share of animal products in the total food expenditure increased from 21.8% to 25.0% in urban areas and from 16.1% to 21.4% in rural areas. Though India is the world's highest milk producer and second largest goat meat producer, the country is concerned over low livestock productivity due to diseases and short supply in terms of dry fodder, concentrates and green fodder. Livestock being mostly in the hands of marginal, medium and semi-medium farmers and agriculture labour with small livestock holdings it is challenging

Box 1: Livestock Output growth

Growth of output from livestock (4.8%) was again highest amongst all the periods considered but this performance, and even more, so for fishing (3.6%), fell short of the ambitious 6 per cent target set for these two sub-sectors.

Source: 12th FYP volume 12th Planning commission report.

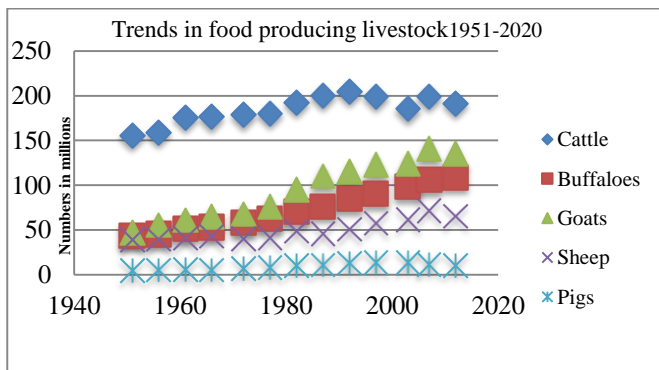


Figure 1: Trends in livestock 1951-2020

supporting Goat Sector in Bihar, Odisha and UP States of India and hence initiated this study.

The scope of the project aims to demonstrate the following:

- The goat sub-sector in India has a great potential to contribute to poverty reduction and
- It offers opportunities where donors can partner with the private, public sector and producers to bring progressive reforms with a life-cycle approach on supply side and demand side with improved forward and backward linkages in small ruminant value chain in Bihar, Odisha, and Uttar Pradesh States in the country.

Potential policy level bottlenecks will also be identified and discussed.

2. Objectives

- Identify areas of interventions in value chains in the Goat Sector in three Indian States i.e. Bihar, Odisha and UP.
- Propose specific recommendations to improve the Goat value chain in the three Indian States under study with reference to small-holder House Holds(HH) and other stakeholders involved in slaughtering and retail meat sales.

3. Approach and Research Methodology

A three-pronged approach as given in the flow diagram is adopted. Research questions were designed to elicit clues for status appraisal and identify initiatives which could address the set objectives. The study is conducted in two parts i.e. one to address the issues in goat production value chain; and the other on goat products value chain. Details are furnished in Annexures.

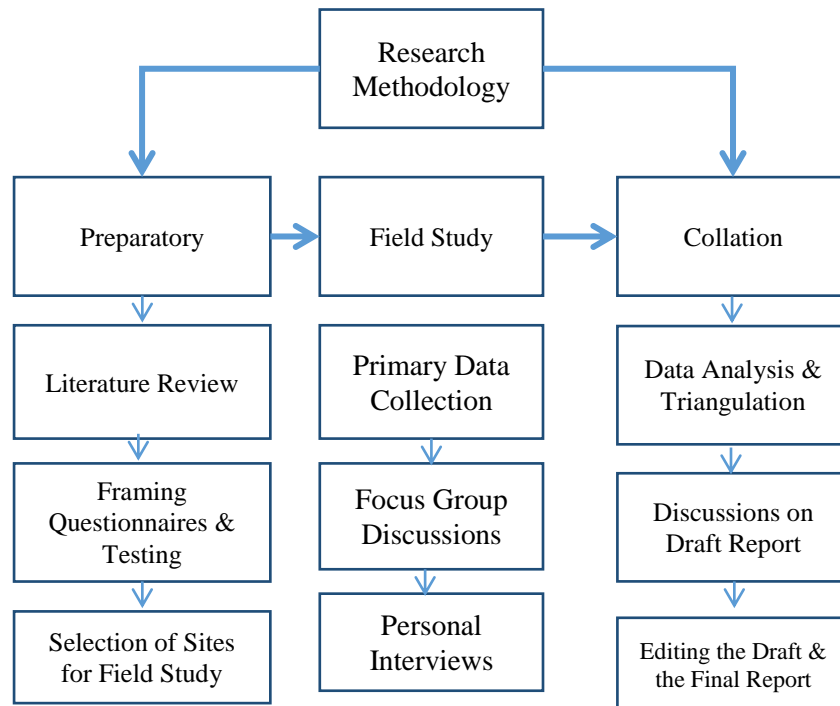


Figure 2: Research and Methodology

4. Goat Value Chain Study

4.1. Goat Sector in India – An overview

Goats are associated with tribes and socially challenged communities in the country. They are also an important part of different religious, social festivities, rituals and celebrations. A similar trend is observed across the three States under the study.

Most of India's goats (70%) are found in just seven of the country's 29 States i.e. West Bengal, Rajasthan, Uttar Pradesh, Maharashtra, Bihar, Tamil Nadu and Madhya Pradesh. There are very few exclusive markets for the goat.

In India, the Goat is an integral part of rural

Box 2: Low Focus on Goat Sub-Sector

Small ruminants play an important role in rural economy. They are mainly maintained by poorer sections of the rural community for providing them a source of livelihood.

However, this sector appears to have been neglected. During the last four decades, there has not been much increase in sheep population. The fine wool production in the country is stagnant at around 45 million kg out of which only 4 million kg is of fine quality. While the demand from the industry for fine wool is around 40 million kg annually; this is met through imports from Australia and New Zealand. Efforts made to increase the production of fine quality wool have not been successful except in Jammu & Kashmir, Himachal Pradesh, UP and Sikkim.

On the contrary, even without any serious developmental programme, the goat population has increased at a very fast rate making it an important species of animal for meat production. The current goat population is estimated over 124 million which may pose a threat to the environmental stability

Source: Page 2 of 147 file://\cyber4\mtm\wrkg\WG-ON-ANIMAL-HUSBANDRY.htm 3/22/2007.

economy as 94% of the goat population is held by marginal, small and medium households. A similar trend is observed in Odisha, Bihar and Uttar Pradesh. Therefore, the goat may be seen as a change agent to engineer rural economy in India over the years ahead; India being the second largest goat meat (>500,000 tons annually) producer globally and the goat sector alone contributes to 8.4% of the livestock sector Gross Domestic Product (GDP) valued at Rs. 386 billion².

Goats also contribute to 4% of India’s total milk production³ (GOI, 2014). But the goat milk sub-sector is not growing in the country due to lack of markets and price structure for selling in the markets. Generally, milk is either consumed or distributed locally by the goat keepers themselves. In UP, milch breeds of goats like *Barbari* and crosses of *Sirohi* are prevalent and the practice of selling goat milk is observed in certain pockets.

Goat Value Chain map

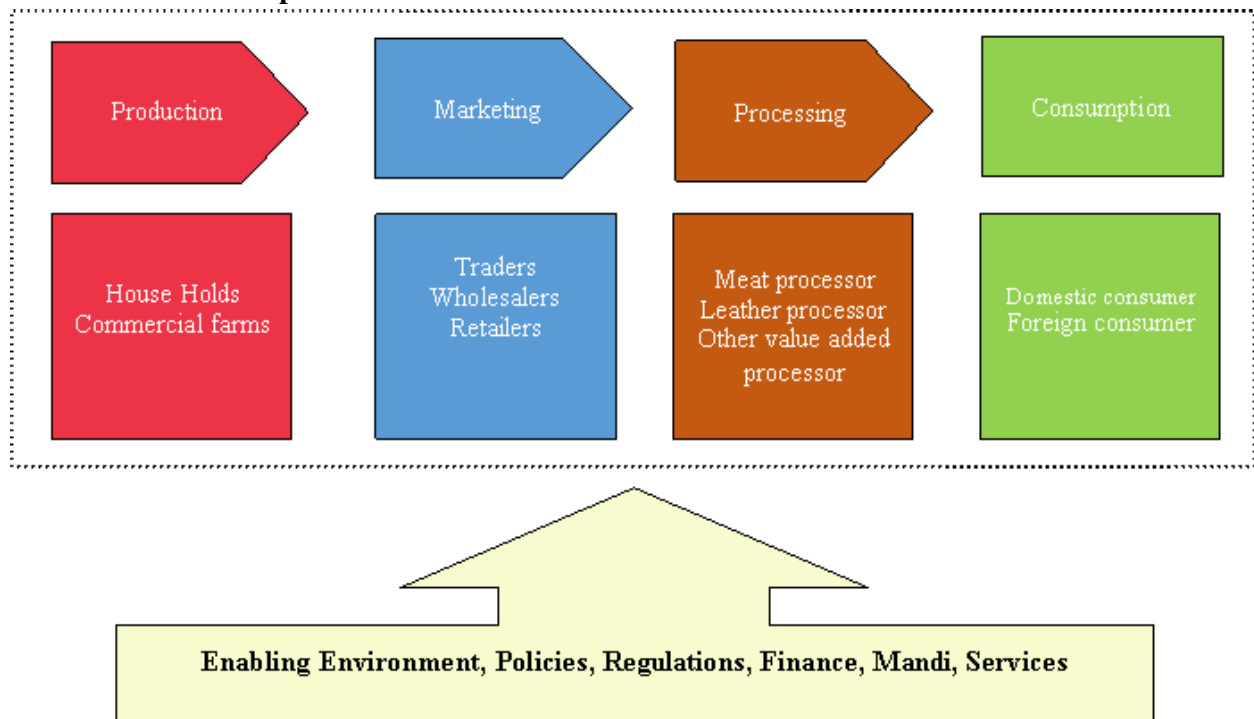


Figure 3: Goat Value Chain Map

²CIRG Annual report 2014-15 (www.cirg.res.in/cstore.php)

³Basic Animal Husbandry and Fishery Statistics , 2014

4.2. Goat Production

4.2.1. Goat Production Systems and Environment

Goats by nature are browsers and given a chance browse for more than 85% of the time mostly at shoulder height and partly on their hind legs. Grazing goats can improve soil vegetation cover and promote biodiversity through seed dispersal, through hooves and droppings; however, goats are neglected due to environmental biases and misconceptions⁴. Goats browse on salt laden leaves and help in reclaiming saline soils⁵. Goats defoliate smallest tree branches without damaging the twigs (behavioral studies CAZRI Jodhpur). Following are the predominant production systems:

- **Extensive Grazing System:** This involves low carrying capacity in situations where land is marginal and is plentiful. It is characterized by low rainfall and various browse plants. The system is used by nomadic people, usually in very low rainfall areas or during winter months when crop residues are available.
- **Tethering:** A sedentary system common to sub-humid and humid zones because of intensive cropping. It is observed that rearing of five goats, fed under controlled grazing by women and children is very convenient and common in Eastern UP and Bihar.

Box 3: Why Goat is neglected?

Goats are accused of damaging environment (deforestation and soil erosion) due to their inherent browsing nature. On the other hand, goats are claimed as useful animals for poor people and are responsible for clearing bushes and making land fit for cultivation. The goats' bad reputation arises mainly from its mismanagement by man rather than any 'inherent goat temperament'. Nevertheless, the trend is slowly changing, and several States are now encouraging goat husbandry.

<https://sites.google.com/site/viveklpm/sheep-and-goat-production-management/sheep-and-goat-production-systems-in-india>

| Table 1: Goat Economic Parameters in Black Bengal | | |
|---|----------------------|--------------|
| S. No. | Parameters | Measurements |
| 1 | Kidding interval | 8 months |
| 2 | Age at maturity | 12 months |
| | Age at first kidding | 14.42 Months |
| 3 | Kidding rate | 71% |
| 4 | Twinning | 60% |
| 5 | Kidding per year | 1.5 |
| 6 | Sex ratio | 1:1 |
| Source: Shalander Kumar, 2007 Commercialization of Goat Farming and Marketing of Goats in India, ICAR, ICRISAT | | |

- **Semi-intensive Production:** This system is practiced to some extent in most of the situations, but the nature and extent of integration depend on the type of crops grown and their suitability to the goats. Advantages of this system include: increased soil fertility due to manure and control of waste herbage growth, reduced fertilizer usage, easier crop management, increased crop yields, and greater economic returns.

⁴CIRG Vision 2030

⁵goatwala.com_ecology.php

- **Intensive Production:** The goats are fed in confinement with limited access to land. It is labour intensive and involves high cash inputs. Cultivated grasses and agro-industrial by-products are fed. This system also has the advantage of allowing control over the animals in the prevailing socio-economic conditions of the country where per capita land holding is hardly 0.2 Ha. Under such conditions, goat rearing becomes an inseparable component of mixed farming system.
- **Extensive Production:** The system is predominant in Odisha, whereas all the three systems are in practice in Uttar Pradesh and Bihar.

Goats from the perspective of climate change are highly resilient and are fairly resistant to diseases. Goat in India is termed as a **poor man's cow**. They have an edge over other red meat producing animals as they are seldom associated with social and cultural barriers; besides producing lean meat with low cholesterol content compared to most red meat producing animals. Goats seldom compete with sheep and large domestic ruminants for their food needs and thrive comfortably on all kinds of plants grown under all agro-climatic conditions. Goats have a smaller generation interval with 85% kidding rate and 60 percent twinning which is a core property of goats. India is the homestead for 20 indigenous dairy and dual purpose goat breeds.

Despite the low focus on goat sector during Five-Year Plan (FYP) periods, goat population increased from 40.7 million (1951) to 140 million (2007) which decelerated to 3.8% during 2012. The Goat sector can address poverty through goat value chain at the production, processing and marketing level. In view of enormous potential, goat rearing is gradually picked up under intensive and semi-intensive systems using improved production technologies. Commencement of Goat production on commercial scale is hardly one percent in the country. There are 157 registered commercial goat farms in the country of which 115 farms are situated in UP, Maharashtra and Madhya Pradesh. On an average the stocking rate ranges from 50- 100 goats; excepting a few farms in Maharashtra which stock around 1200 goats. According to a study made by the Central Institute for Research on Goats (CIRG), 68% of the commercial goat farmers from Madhya Pradesh, UP, Rajasthan and Maharashtra are educated youth trained in goat rearing.

Efforts are afoot for making a Policy on small animals in two of the study States - in Odisha, where a draft policy that includes goats is under active consideration by the Government, while an exclusive goat breeding Policy is under consideration in UP. No such efforts are reported from Bihar.

4.2.2. Goat Ownership

Across the three States, the scale of operations is very low, ranging between 5-10 goats and extensive production system is predominant. Nearly 74% of the goats are held by marginal farmers, 15% by small and medium farmers and 6% by the landless and another 5% by large farmers. Goats are held mostly by Scheduled Caste, Scheduled Tribes and Muslim Minorities. In the prevailing context of production systems, with shrinking common property resources resulting in non-availability of grazing areas on one hand and fast growing demand for goat meat both for domestic consumer as well the overseas;

| | | |
|--|----------------|----------------|
| Goat population 2012 | | 135.17 million |
| 1 | Marginal HH | 54.81% |
| 2 | Small HH | 18.77% |
| 3 | Semi Medium HH | 12.88% |
| 4 | Medium HH | 7.53% |
| 5 | Large HH | 2.74% |
| 6 | Landless | NA |
| Source: Basic Animal Husbandry and Fisheries Statistics 2014, Government of India | | |

there is an urgent need to augment goat productivity. This needs a thorough understanding of the existing production system and a highly focused framework and a comprehensive approach to suit ownership pattern and promotion of commercially viable goat development.

Small holder goat-rearers, rearing bucks for meat, rearing bucks for breeding purpose, and large breeding farms to supply breeding bucks are different practices which informally exist in villages/cluster of villages; which are integral to goat sector.

4.2.3. Gender roles in Goat Rearing

In all the three States under the Study, women play an important role in the goat rearing. Their role differs from State to State. Interactions with goat-rearing families revealed that in Bihar and UP husbandry practices are mostly performed by the women including care of sick animals. In case of Odisha, management activities are shared by men and women. Goat sales are handled both by the men and the women in Bihar and Odisha through joint decision making. However, in UP, male are dominant in the selling of goats. The field findings corroborate with secondary review findings from Tamil Nadu, Gujarat and West Bengal. Studies conducted in Erode District of Tamil Nadu revealed that most of the goat-related indoor activities are managed by the women while men take care of outdoor activities. It is observed that extension support of the Government Department is focused only on men resulting in low knowledge dissemination to women. In Gujarat, men, women and children get involved in goat rearing and maximum by women (Table 3). However, social taboos prevent women from conducting all activities. In West Bengal, women involve more in feeding (72%), Management (64%), Breeding (28%), Health Care (20%) and Marketing (8%)⁶. The Study conducted in five Blocks of Nadia District in West Bengal, concluded that women's involvement is high in management activities, but marketing is mostly controlled by men.

| Table 3: Involvement of Men, Women and Children in Surti Goat Rearing in Gujarat | | | |
|---|---------|--------|----------|
| | Men | Women | Children |
| Feeding Practices | 40.67 % | 52% | 7.3% |
| Cleaning of Sheds | 10% | 82% | 8% |
| Grazing Practice | 5.50% | 80% | 14.5% |
| Milking goats | 2.6% | 85.3% | 12% |
| Care of kids | 29.33% | 58.67% | 12% |
| Care of sick animals | 30.67% | 61.33% | 18% |
| Control of ecto and endo parasites | 56% | 36% | 4% |
| Breeding of animals | 84% | 12% | 4% |
| Sale of animals | 94.6% | 4% | 1.3% |
| Overall | 39.3% | 52.4% | 8.2% |

Source: Deshpande S.B. and Sabapara G.P. (2010), Involvement of women in Surti goat rearing, Department of Animal Science, Indian Journal of Animal Research 44 (1): 64-66, 2010: Agriculture Research Communication Center; www.arccjournals.com

⁶International Journal of Social Sciences and Management, A Rapid Publishing Journal ISSN 2091-2986, (2015)

4.2.4. Inputs

India is bestowed with naturally evolved efficient breeds of goats suitable to different agro-climatic conditions. The economics of goat production at farmers’ level is a product of nutrition, preventive health, systematic housing and breeding management.

Nutrition: Nutrition contributes to 50% of the animal health. Primary source is through extensive grazing/browsing with zero to marginal supplements at home.

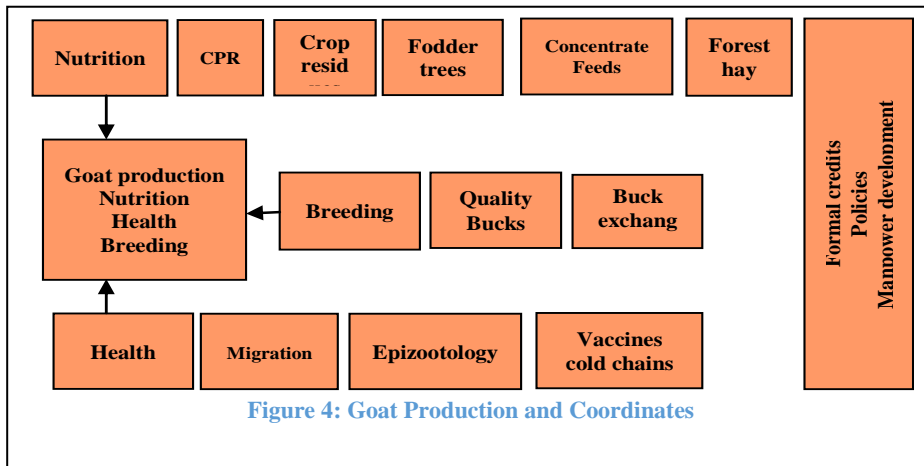


Figure 4: Goat Production and Coordinates

This is the current concept of profitability in goat sector. Forest regulations are stringent and scope of grazing for goats from forest is getting marginalized. Further shrinking common property resources are an added disadvantage to the extensive production system. Shifting to semi-intensive/intensive systems means substantial additional expenditure on concentrates. As per the 12th Plan Working Group Document, the country is facing feed and fodder shortages by 10% in dry fodder, 33% in concentrates and 35% in green fodder. The National Institute of Animal Nutrition and Physiology has reported a likely wider gap between demand and supply situation by 2025. While the demand and supply positions are to be addressed through Policy platforms, it may be pragmatic to align small holder goat rearing families and promote groups to take up fodder production and retail sales of complete fodder blocks to cater to fellow goat rearing families.

a. Government’s Initiatives Towards Improving Feeding Situation

Fodder development initiatives are in general focused around large ruminants. During the last four decades, the extent of cultivated green fodder is stagnant at 4% (Annual Report 2012-‘13 Animal Husbandry Department, Government of India (GoI)).

Preventive health

Health is wealth which is built on a sound nutrition platform. Proactive health means a strategic implementation plan to vaccinate against the common bacterial and viral diseases to goats at vulnerable age groups and seasons. For example, kids are highly vulnerable to *Peste des Pettis Ruminants* (PPR) while adults acquire immunity; obviously cent percent vaccinations during kidding seasons over a period can save the flocks. PPR is a preventable disease like Rinder Pest. Estimated losses due to preventable PPR disease in sheep and goats were reported to be Rs. 1204 billion (NivedI 2015) in India. The field data show that in UP and Bihar private service providers play an important role in providing health services and charge very high.

Box 4: Impact of Diseases in India
 Mortality and production losses due to morbidity are a challenge to goat-rearers. Between 2007-'13, there has been an increase in goat mortality due to PPR by 34%, Blue Tongue by 24%, Pox by 14%, and ET by 12% (Balauruganet al.2015).
 Suresh et al, 2015 (**Reference?**) reported the intensity of PPR to be high during June to September in most of the States.

Similarly losses due to Foot and Mouth Disease (FMD) in large and small ruminants are estimated to be Rs. 23.19 billion per annum. Kid mortality is yet another concern due to diarrhea and internal parasites.

Similarly vector-borne diseases can be controlled through combating relevant vectors like ticks, mites, flies and mosquitoes. Hygiene and health of water bodies will minimize production losses due to internal parasitic diseases.

Disease reporting is mandatory for all the countries as per the OIE (Office International des Epizooties), a World Organization for Animal Health Standards and CODEX (Codex Alimentarius Collection of Food Standards) regulations. Countries participating in meat exports have to comply with the stipulated standards. The GOI in each plan budget supports all State Governments under the Assistance to State for Control of Animal Diseases (ASCAD) on 3:1, 9:1 or cent percent grant basis as the case may be in different States.

Box 5: National Livestock Policy on Disease-Free Zones, NLP 2013

Efforts will be made to make the country free from the economically important infectious diseases. Now the focus will be on control of FMD, PPR, Brucellosis, Swine fever and other diseases having major impact on productivity. Disease-free zones as per OIE guidelines will be created in areas of export potential.

Source: National Livestock Policy 2013

b. Government's Initiatives Towards Disease Prevention, Control and Containment

Under National Control Programme on Foot and Mouth Disease (FMD), *Peste des Petitis Ruminants* (PPR) and *Brucellosis* an amount Rs.31,140 million has been allocated during 12th FYP which includes Classical Swine Fever Control. PPR control programme has been expanded to other States which remained uncovered during 11th FYP period.

The FMD Control Programme has been expanded in February, 2014 and being implemented in 313 districts of the country which includes State of Rajasthan and all the Districts of Uttar Pradesh. The FMD control all over the country has been planned to be covered in a phased manner subject to the availability of vaccine and funds during 12th Plan period.

c. Breeding

Influence of high genetic merit in production traits is largely dependent on environment i.e. the conditions under which the animals are born and raised; climate, nutrition, disease, general management, etc. From the view point of challenges due to nutrition shortage and the emerging and reemerging diseases, it is worthwhile to resort to indigenous pure breeding through selection. The National Livestock Policy 2013 intended all State Governments to relook at their policies and indicated certain guidelines to augment livestock productivity. The National Rural Livelihood Mission (NRLM), the National Livestock Mission and the NMPS are some of the ongoing programmes in the country involved in small ruminant

Box 6: Excerpts from National Livestock Policy

Breeding Policy for Sheep and Goat: This will aim to improve growth, body weight, reproductive efficiency, meat and wool quality and quantity, and to reduce mortality. An area-specific approach would be adopted to improve quality and quantity of coarse wool and fine wool. Main focus will be on to produce and distribute good quality rams/bucks of quality indigenous breeds which can thrive in different agro-climatic conditions. Artificial insemination would also be encouraged. Cross-breeding with high yielding exotic and other native breeds of goats will also be considered.

Source: National Livestock Policy 2013

development initiatives, which need to converge at the interface. NLM especially has components to promote small ruminant development initiatives on SHG platforms and on cooperative structures.

Looking at the goat productivity in totality with the core components i.e. improved feeding situation, preventive health cover and scientific breeding; goat farmers need conducive and enabling environment to upscale stock positions from 1-5 to 5-10 goats and so on within the ambit of carrying capacity. Goat supply chain includes those families whose practice is to fatten kids for market; some families practice rearing of breeding bucks for service and some families look for replacement stocks either from fellow goat-rearers or goat breeding farms (government or private). This kind of transformation is essential to meet the market surges for chevon which is likely to be continuous. The need for economically viable movement of goats through lairages cannot be undermined. Most of the goat-rearing families of the three States under the Study expressed shortage of quality breeding bucks as a constraint resulting in usage of stray bucks. In UP and Bihar, good quality buck is castrated for selling at high price.

4.3. Processing

4.3.1. Goat Products

A Goat product in relation to household income is the goat itself for meat and the milk which is mostly fed to pre-weaning kids. Once the goats are slaughtered chevon is the principle product and an array of slaughter by-products depicted in the inset here. Goat households part with their goats to traders on an arbitrary live-weight basis. The money they get from the traders is a product of carcass weight and the prevailing market price for goat meat. Goat rearing families do not have a say on different non-edible by-products that attract pet feed industry, cosmetics, pharmacy and leather industry.

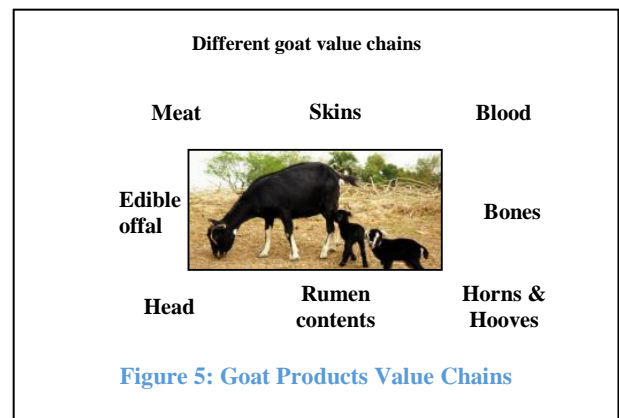


Figure 5: Goat Products Value Chains

4.3.2. Goat meat Competitiveness at International, National and Regional level

World meat consumption is likely to increase by 66% by 2050 due to rapidly growing world population; the BRICS countries accounting for more than 50% of the world's total population represent most of the animal protein demand (NRC meat vision 2015). Obviously augmenting meat productivity in the country needs a larger focus. Buffaloes, goats, sheep and chicken in India are the world's first, second, third and fifth largest in numbers (FAO 2014).

The contribution of goat meat in the total meat production in the country was 16% (GoI Annual report 2014-15). Goat meat production increased from 0.47 to 0.596 million tons between 2002 and 2011 recording an annual growth rate of 2.4% (Central Institute for Research on Goats, Annual Report 2014-'15). Output value of the meat/mutton has substantially increased from Rs. 99990⁷ million in 2004-'05 to 230490 million by 2010-'11 at current prices⁸.

⁷Exchange: One \$USD= Rs.66

⁸Basic Animal Husbandry and Fisheries Statistics 2014, Government of India

During 2012-'13 chevon production in Odisha, Bihar and UP was 43.86, 65.57 and 183.51 thousand tons respectively which is in turn 5.72%, 6.9% and 19.4% of the national goat meat production (941'000 tons).

| Species | India | World | Proportion |
|-------------------------|-------------|------------|-------------|
| Buffalo meat | 1.53 | 3.59 | 42.5 |
| Goat meat | 0.6 | 5.29 | 11.41 |
| Chicken | 2.21 | 92.7 | 2.53 |
| Beef | 1.09 | 62.73 | 1.7 |
| Mutton | 0.29 | 8.48 | 3.39 |
| Pork | 0.32 | 108.5 | 0.3 |
| Others | 0.25 | 20.71 | 1.2 |
| Total | 6.29 | 302 | 2.08 |
| Source: FAO 2014 | | | |

4.3.3. Goat Meat Demand and Supply Chain

Goat meat is consumed widely throughout the world especially in developing countries. Rise in per capita income and changing lifestyles have made a rapid shift in the dietary habits of non-vegetarians. Consequently, the demand for quality milk and meat products is on the rise especially lean meat and low cholesterol foods and beverages. Since goat meat and mutton are seldom associated with social and religious barriers, the demand for goat meat and mutton has swiftly increased resulting cost escalations from Rs. 60 per kg to Rs. 450 per kg over a decade. A significant increase in the demand for goat meat is expected in the next 20 years especially in the East and South East

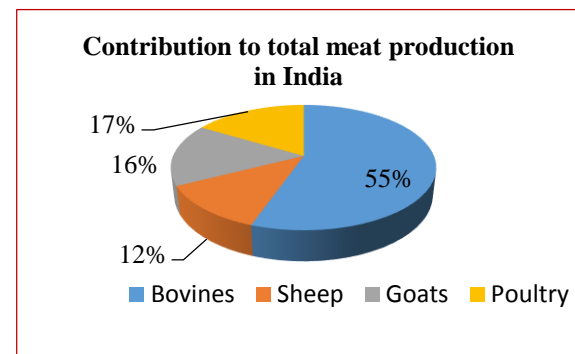


Figure 6: Contribution to total meat production in India

Asia and it will be an excellent opportunity to enhance export of live goat and their meat from India. (Kumar S., 2007). The demand for goat meat will be 2.13 million metric tons by 2050 whereas the estimated production will be only 1.36 million tons. Hence increasing productivity is important than increasing number of animals. Contribution of different species of Livestock and poultry to the total of 6.3 million tons of meat production in the country⁹ is given in the pie here (Figure 6). India being the world's largest buffalo meat exporter and beef being associated with religious attributes in India, red meat needs are met from sheep and goats in that order.

4.3.4. Value Addition and Entrepreneurship Development

Considering the market signals on growing demand for goat products, there is a huge potential for investment in the goat meat sub - sector to enhance the livelihoods and business opportunities for goat rearing families. However, in developing countries, lack of an organized production, marketing structure

⁹Source: 12 FYP_ Planning Commission Report on Animal Husbandry.pdf

in the goat meat sector is primarily responsible for their poor export earnings, compared to those in developed countries such as Australia and New Zealand. (Dhanda J S et al., 2003)

In addition to growing demand for raw goat meat, there is a gradual increase in demand for processed meat products also in the urban and peri-urban markets. Value addition to meat is an important avenue for effective utilization of goat resources with increased demand and higher returns. A direct value addition to meat can be possible by developing a variety of value added meat products viz. kebabs, dried meat, nuggets, sausages, smoked mutton ham, mutton bites biryani etc. However, at present in India, processing and value addition to meat is less than 2%. (Vision 2050, National Research Centre on Meat. 2015).

The organized development of processed meat sector is important to realize full benefits from goat meat sub-sector and contribute for sustainable meat production. The growth of processed meat sector assures the farmers a regular off take of their produce at reasonable prices and provides a variety to the consumer. Small scale ventures of value added products including traditional ones would go a long way in improving the economics of goat rearing and meeting the consumer demands. Effective utilization of by-products from the slaughterhouses also will contribute to the value addition of goat meat sub-sector.

4.3.5. Slaughter Houses

Municipalities and Gram Panchayats are the regulatory bodies of animal slaughter and hygienic meat production. The municipal slaughter houses in general are in extremely poor condition. The infrastructure is insufficient, not maintained, equipment is either not available or if available, they are not fit for use. Most of the slaughters that take place in slaughter houses do not adopt scientific slaughter methods, hygienic practices, water sanitation measures and public health measures.

In the States studied, it was observed that 90% of the goats are slaughtered in open despite a ban on open slaughter. During the Study, one unofficial slaughter house run by a group of butchers was noticed in Odisha. In Bihar there are three slaughter houses run by private players exclusively for buffalo slaughter (two in Patna and one in Araria District). There are 34 slaughter houses in UP of which eight are permitted to slaughter goats. The Ghazipur slaughterhouse belongs to Municipal Corporation Delhi and is being managed by Alana brothers. The capacity utilization of these slaughter houses is low, slaughtering only 3500 goats.

4.3.6. Processing for Export Market

India's meat exporting units are well organized; emphasize on quality and adhere to the national and international standards. Despite complex logistics, India has demonstrated its capability to supply quality meat products at competitive prices. Generally, the sheep and goat meat is exported under chilled condition and testing has to be conducted on post facto basis. The very fact that there have not been many complaints from the importing countries on the safety of the products itself determines the quality of the meat supplied. However, one can also infer that India is not exporting to developed countries like EU, USA, Australia, Japan and others.

Export costs include per animal dressing cost of Rs. 130 to Rs.200, and freight charges of Rs.50- Rs.60 per kg carcass (minimum container consignment for one container is Rs. 1400 kg). Carcasses declared unfit for the purpose of export are disposed locally at selling prices varying from Rs 180–Rs.200 per kg of

meat. Other costs include fee for obtaining certificates (SAPPLPP 2011). Twenty-five registered export-oriented modern abattoirs (APEDA) handle the meat exports in the country. In particular, two units (at Deonar in Mumbai and Gurgaon in Haryana) exclusively handle sheep meat, whereas the unit in Gautam Buddha Nagar of UP handles sheep and goat meat for exports. In addition, there are ten units that process sheep meat. These units procure dressed carcasses from government-approved municipal slaughterhouses and process meat for exports. Depending on the source of meat, the sheep and goat meat along with buffalo, beef manufacturers are licensed under category A, B or C. About 279 units were licensed under Ministry for Food Processing Industry, as on April 1, 2009.

4.3.7. Goat Skins Processing

Goat skins are valued high due to their soft texture and light weight. Leather is most important and potential by-product of meat industry. Goats, sheep and buffalo slaughters are the principal sources of leather production in the country. Tanneries are the primary industries (small/cottage) that collect salted raw skins for further processing and grading leather. Two billion square meters of leather is produced in India which accounts for 10% of the worldwide leather production (Indian leather and tanning industry profile 2010). Leather industry in India is growing very fast and India accounts for 6% of the global market in leather goods. India's leather and leather products exports increased from Euro 1618.01 million in 2003-'04 to 2627.01 million in 2008-'09 with a growth rate of 10.17%. India is the fifth largest exporter of Leather goods and accessories in the World with 24.27% in the country's export of Leather and Leather Products. In the year 2008-'09 India exported 183,597,321 sq. feet finished goat leather with 32.67% by value wise (Italian Trade Commission 2010).

Detailed study on skin value chain is not attempted in the study due to its low contribution to goat-rearing families' income.

5. Marketing

5.1. Domestic Market

In States like Maharashtra, goat markets are associated with Agriculture Produce Marketing Committees. In most other places, weekly *haats* are governed by either Gram Panchayats or managed by private people. In Rajasthan livestock exchanges also take place in livestock fairs. Generally goats move between their habitat to weekly markets and end-markets by traders and butchers.

In these markets, fee collected from the agents and farmers and credited into the government account is not benefitting livestock sector. It is appropriate to use this revenue for improving veterinary health facilities, fodder for animals, shelter for stay, fresh water for animal drinking etc. which are seldom visible in the market yards. All animals coming to market are to be vaccinated and sick animals are to be separated and kept in quarantine room for health support. Goat transporters seldom adhere to livestock

Box 7: Marketing Initiatives of the Government of India

Goats are mostly sold in lots in livestock fairs, periodical markets and daily markets. Each goat is assessed individually by the buyer. Factors affecting the price are meat, milk yield, breed, age, sex, quality, locality and season. The Government of India established marketing cells in the Third Five-Year Plan in various States to regulate the existing markets and organize co-operative markets to facilitate marketing of products, to make market surveys, to collect and disseminate market news, and to advise better marketing methods and adoption of grading procedures.

Source: <https://sites.google.com/site/viveklpm/sheep-and-goat-production-management/goat-products-and-marketing>

transportation rules for fear of high logistics. Most of the livestock markets do not have information dissemination system to build awareness among different market players in understanding the procedures of handling livestock while transporting and consequences of non-adoption of procedures.

Goats are collected from the farm gate to livestock markets by primary traders and selling them to butchers/secondary traders. The secondary traders collect goats from local *mandies* (markets) and send to end-markets. The meat price in the country is soaring high due to cost escalations in the hands of multiple intermediaries.

In Odisha value chain actors comprise producers, primary traders, secondary traders and butchers (urban and rural). At the producer level annual sales are 10 goats with an annual net income of Rs.1100 after monetizing the labour cost and cost of the bucks borne at home. Labour and cost of the bucks if not monetized the annual income is Rs.38000. Primary traders, secondary traders, small butchers and urban butchers handle annually 500, 2000, 450 and 700 goats respectively with an annual net income of Rs.64,500, Rs.100,000, Rs.144,000 and Rs.231,000 respectively.

In Bihar, at the producer level, annual sales are seven goats with an annual net income of Rs.1260 after monetizing the labour cost and cost of the bucks borne at home. Labour and cost of the bucks if not monetized the annual income is Rs. 22,260. Primary traders, secondary traders, small butchers and urban butchers handle annually 450, 1500, 300 and 500 goats respectively with an annual net income of Rs. 76,500, Rs.75,000, Rs.96,000 and Rs.107,500 respectively.

In Uttar Pradesh, producer level annual sales are 10 goats with an annual net income of Rs.1750 after monetizing the labour cost and cost of the bucks borne at home. Labour and cost of the bucks if not monetized the annual income is Rs.25,750. Primary traders, secondary traders, small butchers and urban butchers handle annually 500, 2000, 450 and 700 goats respectively with an annual net income of Rs. 33,000, Rs.100,000, Rs.119,250 and Rs. 198,100 respectively. Across the three States studied 75% of the consumer price goes to goat rearing families.

5.2. Export Market

Global demand for sheep and goat meat is around 13.77 million tons to which India's contribution is 6.5%. Chevon export has fallen in recent periods due to high domestic price. Indian meat exports commenced in 1969 have seen a steady rise; comprised major share from buffaloes. India exported 23,611.55 tons of sheep and goat meat to the **world** which is worth Rs.82811 million¹⁰. Goat and sheep meat exports account for 3% of the total meat exported by value and 6.5% by weight. The main importing countries are Saudi Arabia, Egypt,

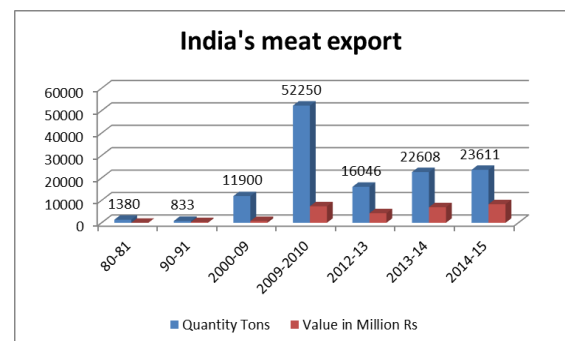


Figure 7: Export market bar graph

¹⁰ APEDA Source: Suresh et al, 2012, India's meat export :Structure, composition and future prospects, Indian Journal of Animal Sciences82 (7): 749–756, July 2012and http://agriexchange.apeda.gov.in/indexp/Product_description_32head.aspx?gcode=0402

Iraq, Kuwait and Malaysia. This is meager (6.5%) of the total world exports of goat and sheep meat (by weight) and even smaller 3.7% in terms of value. Sheep and Goat meat export figures and value is presented in Figure 7.

6. Enabling Environment

6.1. Service delivery

Across the country, Government is the single largest entity to provide livestock health services through network of veterinary institutions at various levels and capacities governed by respective State Governments and State Chapters of the Indian Veterinary Council. During the last three decades many private agencies, Non-Government Organizations (NGOs) and producer companies have been into livestock sector and introduced *Gopal, Gomitra, Gopalmitra, Pasusakhi* and by different names to perform Artificial Inseminations, Veterinary First Aid, and Vaccinations in a wider terminology of CAHWS. This system of alternative service delivery has become indispensable to extend reach and coverage. The concept resulted in large number of quacks who indiscriminately use hormones and antibiotics (*Existing AI Delivery System in the Country*, a study conducted by ICSD for National Dairy Development Board in 2009- unpublished). Resolute efforts are essential to bring the alternative service delivery concept under a common framework for ethical supervision, professional guidance and continuous up scaling of skill.

6.2. Finance

The whole process of transformation is reliant on credit opportunities, and insurance for a large fleet of under privileged families rearing goats.

Table 5: Credit flow to animal husbandry in million Rupees

| | | 2002-03 | 2006-07 | 2007-08 | 2008-09 | 2009-10 |
|---|-----------------------------------|---------|---------|---------|---------|---------|
| 1 | Agriculture and allied activities | 175550 | 909450 | 732650 | 915130 | 1078580 |
| 2 | AH | 26370 | 80450 | 90330 | 112030 | 102600 |
| 3 | % AH to total Term loans | 15.02 | 8.85 | 12.33 | 12.24 | 9.51 |

Source : Adopted from 12th FYP working group document

Small ruminant sector in general and goat in particular did not receive their due share of impetus during the first nine FYP periods. During 11th plan a scheme on “Integrated Development of Small Ruminant and Rabbits” was introduced. The scheme is to benefit unemployed youth especially women, poor and marginal farmers. The scheme is being implemented through National Bank for Agriculture and Rural Development (NABARD) for individual beneficiaries to start Sheep /Goat farming or rearing units on commercial scale. But in reality, marginal, small, medium level goat rearing families are unable to access the formal credits which preclude them from scaling up their goat holding for a continuous economic flow (see box 8).

Box 8: Credit Status of Small Ruminant Sector in India

NABARD - the apex bank for financing agriculture and rural development, provides refinance for different activities, and also co-finances projects with commercial banks and RRBs. More than 70% of the refinance disbursement goes for dairy development. The share for poultry, small ruminants and piggery has declined sharply from 50% in the early 1990s to 32% in the late 1990s and further to less than 22% in triennium ending 2005-'06.

Source: Annual report, Department of Animal Husbandry And Fisheries GoI (2014-15)

The 12th Plan working group reported that during 11th FYP an amount of Rs.1900 million were allocated under “Integrated Development of Small Ruminants and Rabbits” of which only 5% of the outlay (Rs.110 million) was spent. The group observed that very little efforts were made by the Animal Husbandry Departments both at the State and Central level in this regard.

Further, Industrial Development Bank of India extends credit to individuals, groups, cooperative societies, federations and limited companies to a tune of Rs. 50,000/- to Rs. 5 million for establishing goat-rearing on commercial scale against collateral security/ immovable properties. However, banks experienced difficulty in obtaining such securities and resulting in only few takers not beyond Rs.50,000 credit¹¹.

Box 9: Livestock Insurance - Centrally Sponsored Scheme

The scheme covers 300 selected Districts from 10.12.2009. The scheme benefits the farmers and cattle rearers having indigenous/crossbred milch cattle and buffaloes. Benefit of subsidy is to be restricted to two animals per beneficiary per household. The funds under the scheme are being utilized for payment of premium subsidy, honorarium to the Veterinary Practitioners and publicity campaign for creation of awareness. 50% of the premium of insurance is paid by the beneficiary and the rest 50% is paid by the Government of India. An amount of Rs.47.65 crores has been released to the States and 10.88 lakhs animals have been insured during 2013-'14 up to March, 2014.

Source: Animal Husbandry Department Annual Report 2013-14

The rates of interest of the NABARD on bankable goat schemes is 12% per annum as per the Reserve Bank of India's guidelines which is dynamic and applies to all categories of beneficiaries. Despite subsidy from the Government, the credit use is hardly 9%. Therefore, it is questionable for marginal/small and medium goat rearing families to avail credit at 12% annual interest¹².

6.3. Livestock Insurance

Risk bearing abilities of a large number of goat rearing families are very meager which results in selling premature stocks especially during vulnerable seasons, natural calamities and peak trading seasons. National Livestock Policy 2013 emphasized on revamping livestock Insurance and rendering its accessibility to all livestock farmers. Department of Animal Husbandry, Dairying and Fisheries, Government of India identified 300 districts across 29 Indian States under livestock Insurance on 50% (premium costs) share basis between the beneficiary and the Government of India. Probably the Centrally Sponsored Scheme on livestock insurance is skewed towards dairy development. However in the 12th FYP, under NLM sub-component, integrated development of small ruminants and Pig provisions is created for credit including insurance. National Insurance Companies insure indigenous, crossbred and exotic Sheep and Goat. Goat-rearing families do not show interest to insure small ruminants mainly because of exhaustive list of exclusions indicated in the policy¹³.

6.4. Policies and Regulations

Government of India Policy

National Livestock Policy 2013 and National Livestock Mission 2014 are skewed towards large bovines. The existing goat production system on marginal input may not sustain because of the emerging challenges from climate change, diminishing common property resources and threats of foreign import of mutton and chevon. Obviously modernization of goat production system will take over.

¹¹<http://www.idbi.com/sheep-and-goat-rearing.asp>

¹²https://www.nabard.org/english/animal_goat.aspx

¹³<http://www.newindia.co.in/Content.aspx?pageid=84#a1>

Minor Veterinary Services

As per the Veterinary Council of India (VCI) regulations, list of Minor Veterinary Services have to be notified through a gazette. All minor veterinary services have to be rendered by Para-Vets under the guidance of Registered Veterinary Practitioners. Since many NGOs and private sector players are into the service delivery in livestock sector, concerned organizations have to abide by the provisions of the Act given in Box 10. Only 15 Indian States have notified Minor Veterinary Services. Of the three study States, UP and Bihar have not notified minor veterinary services. An analysis in to the implications of the Veterinary Council Act Clause 30b given in Box 10 also speaks of the diploma or certificate issued by the respective State Animal Husbandry Departments, whereas the CAHWS whose services are essential but need to be governed by a registered veterinary practitioner is by and large lost the focus. There is a need to mainstream all such individuals involved in veterinary first aid, vaccinations, de-worming etc. and the organizations promoting such service delivery should training them on priority.

Box 10: Clause 30b of VCI Act 1984 (No. 52 of 1984)

Practice of veterinary medicine in any state:

Provided that the State Government may, by order permit a person holding a diploma or certificate of veterinary supervisor, stock man or stock assistant (by whatever name called) issued by the directorate of Animal Husbandry (by whatever name called) of any State or any veterinary institution in India to render minor veterinary services under the supervision and direction of registered veterinary practitioner

Minor veterinary services mean the recurring of preliminary veterinary aid vaccination, castration and dressing of wounds, and such other type of preliminary aid or the treatment of such ailments as the State Government may by notification in the official gazette, specify in this behalf.

7. Constraints Analysis

From the field interactions constraints observed across the value chain along with reasons are presented in the following table.

Table 6: Key constraints, reasons and importance across three States

| Attribute | Constraint | Reasons | Importance | | |
|------------|--|--|------------|-------|-----|
| | | | Odisha | Bihar | UP |
| Production | Low Productivity | Poor feeding, | *** | *** | ** |
| | | High mortality | *** | *** | *** |
| | | Poor Breeding practices | ** | *** | ** |
| | Lack of access to health services | More stationary institutions | ** | *** | ** |
| | Lack of timely vaccinations | Vaccine not available in institutions | ** | *** | ** |
| | | Lack of strategic approach | ** | *** | ** |
| | Lack of diagnostic facilities | Inadequate infrastructure | ** | *** | ** |
| | Lack of skills and awareness | Inadequate training infrastructure | ** | *** | ** |
| Processing | Inadequate infrastructures for hygienic slaughtering | Low focus from municipalities and consumers on hygienic meat | *** | *** | *** |

Table 6: Key constraints, reasons and importance across three States

| Attribute | Constraint | Reasons | Importance | | |
|---|---------------------------------|--|------------|-------|-----|
| | | | Odisha | Bihar | UP |
| | No product diversification | Low consumer awareness and lack of market information | ** | ** | ** |
| Marketing | High transaction losses | Too many intermediaries | *** | *** | *** |
| | | Low market infrastructure and lack of standards and procedures | *** | *** | *** |
| Credits | Lack of access to timely credit | Lack of information and difficult procedures, conditions and high interest rates | ** | ** | ** |
| *** very important ** moderate important * less important | | | | | |

8. Limitations of the Study

1. No documentary evidence while conducting field study hence too many assumptions for drawing conclusions
2. Data sharing from butchers, intermediaries and transporters on sensitive issues is difficult: religious, taxes etc.
3. Field data collected on market may not exactly represent State figures
4. Low attention is given to goat milk and skin value chain as producers do not get substantial financial gains.

9. Recommendations

The overall recommendations are categorized into goat production, processing, marketing and external factors influencing goat value chain. Based on the constraint analysis following interventions and action points are proposed.

9.1. Production

Survival of the Goat at the household level is a major challenge because of high mortality (40% kid mortality). As a priority issue, this requires immediate attention.

A. Household

Reduce the mortality to 10% from existing high mortality situation

- Conduct preventive vaccination on a campaign mode to goat flocks at vulnerable ages and seasons
- Systematic de-worming on a calendar approach
- Increase the presence of skilled CAHWS.

B. Goat Farmers' Collectives

Empower goat rearing families by organizing them in to collectives and support them with forward and backward linkages.

- Organize 2000 small and medium goat rearing families into a collective interested in supplying goats to market
- Support the collectives with providing breeding bucks, preventive health support, services of CAHWs, business plan development, knowledge and skills and, goat aggregation, community insurance and credit marketing.

C. Commercial

a. Promote commercial goat farming on semi-intensive/intensive production system

- Support for stocks, breeding buck, shelter, feed, services like: Credit, health, skill development, insurance, credit, contractual agreement with the federation for supply of breeding bucks and does.
- Limit the mortality to 10%
- Promote broiler goat farms on an experimental basis Infrastructure, technology transfer, credit, insurance, training, information

b. Production of quality breeding bucks by promoting private goat breeding farms

- Infrastructure, stocks, feed, credit, training, business plan development, credits, insurance, and marketing.
- Distribute good quality bucks on loan in limited area

9.2. Processing

To work with Municipalities to improve hygienic meat and comply with FSSA

1. Modernization of meat stalls in select locations with debt equity and technology transfer
2. Establish private slaughter houses in select locations
3. Support product development i.e. dry meat, sausages, kebab (R&D)
4. Support market testing and promotion

9.3. Marketing

Reduce transaction losses on live goat sales

- Strengthen *mandis*: Electronic weighing machine, water, food and shelter
- Develop *mandi* protocols and intra *mandi* information on prices
- Contractual agreement with seller, buyer and banker through collective
- Breed certification and branding (Black Bengal specific to Odisha).

9.4. Export market

To increase the current 12% export potential of goat meat to Gulf countries by 20%.

- Meat processing
- Production of value added products
- Simplify meat certification process through a single window

9.5. Enabling Environment

- Working with Odisha, Bihar and Uttar Pradesh State Governments in developing Goat and Sheep Policy encompassing breeding, improving feeding and health situation, *mandi* functioning, processing, marketing, credits, investments and administrative functions
- Notification of minor veterinary services in case of UP and Bihar
- Develop an organic link between CAHWs and AHD and allied schemes and projects
- Develop protocols, standard curriculum and training to CAHWs
- In Bihar promote private players in vaccine delivery and cold chain management
- Promote private veterinary diagnostic centers under agri-entrepreneurship and develop protocols and licensing.

10. Investment opportunities

The GoI initiative allowing 100% FDI in food processing industry, for setting up industries within or outside SEZ, would promote Halal hub for exporting meat to South East Asia and Middle East with a provision of Central funds to the tune of Rs.12.5 billion and Rs.3.5 billion by the States.

In addition, the GoI has set up US\$315 million corpus for NABARD to lend for setting up food processing industries, at a lower rate of interest.

The following activities can be implemented under this mission:

- Scheme for technology up gradation, establishment / modernization of food processing industries
- Setting up/ modernization and expansion of abattoirs
- Modernization of meat shops

The livestock sector output value in 2010-'11 was Rs.2075 billion (at 2004-'05 prices) which comprised 4% of the GDP and 26% of the agricultural GDP. The total output worth was higher than the value of food grains. The enormous output value and pace of growth attracts investments especially in the areas of R&D in goat meat processing, to meet the growing demand for ready to eat foods.

The investment opportunities identified within the goat value chains are highlighted in the table below:

| Table 7: Investment Opportunities | | |
|--|---|-----------------------------|
| Area | Investment area | Instrument |
| A. External Environment | | |
| 1 | Promote training centers in Bihar | Grant |
| | Strengthen Disease Diagnostic Laboratories (Odisha, Bihar, UP) | Grant |
| 2 | Support for digitalization of records (Odisha, Bihar, UP) | Government budget, and loan |
| 3 | Seed money for vaccine procurement (Bihar) | Loan |
| 4 | Promote farmer schools (Odisha, Bihar, UP) | Government budget |
| 5 | Support <i>mandi</i> infrastructure (Odisha, Bihar, UP) | Loan |
| 6 | Place critical staff to support project implementation, monitoring and evaluation (Odisha, Bihar, UP) | Loan |
| B. Production | | |
| 1 | Goat Farmers' Collective – 2000 members' x 125 Federations owning 10,000, 00 goats. Initial corpus to cover formation of collectives, training of office-bearers, staff salaries (manager, business coordinator), renting of office premises, basic infrastructure, software etc. (Odisha, Bihar, UP) | Grant |
| 2 | Promote commercial goat farming on semi intensive/intensive production system – infrastructure, management knowhow, credit, insurance, training, information (Odisha, Bihar, UP) | Loan |
| | Promote breeding farms through entrepreneurship: Stock, Infrastructure, Credit, Management Knowhow, Insurance, Training, Information (Odisha, Bihar, UP) | Loan |
| 3 | Promote broiler goat farms for export markets - Infrastructure, Technology Transfer, Credit, Insurance, Training, Information (Odisha, Bihar, UP) | Loan/Grant |
| 4 | Feedlot establishment –Demonstration 1 per State | Loan |
| 5 | Distribution of 100,000 bucks on rotating basis (Odisha, Bihar, UP) | Loan |
| | Train 400 CAHWs each looking after 2500 animals (Odisha, Bihar, UP) | |
| C. Processing | | |
| 1 | Combined Abattoir& Processing facility – 2 per State | Loan, equity |
| 2 | Integrated goat farming and processing models (Odisha, Bihar, UP) | Loan, equity |
| 3 | Modernization of meat shops and establish village level slaughter houses (Odisha, Bihar, UP) | Loan, equity |
| D. Marketing and Distribution | | |
| 1 | Investment in infrastructure of goat <i>mandis</i> (Odisha, Bihar, UP) | Loan, grant |
| 3 | Investment in specialized vehicles for goat transport (Odisha, Bihar, UP) | Loan |
| 4 | Veterinary clinic and diagnostic chain (Odisha, Bihar, UP) | Loan guarantee, equity |
| 5 | New Product Development –R&D and Market Testing (Odisha, Bihar, UP) | Loan, grant |

11. Way forward – transforming goat sector from subsistence to commercial

Creeping consequences of climate change, diminishing common property resources, shortage of feed and fodder resources, low productivity and prevailing mortality rates etc., are major challenges impacting the goat production system. All the endeavors during successive five-year plans could not bring in tangible results. As a consequence of the prevailing distressing state, there is a fear that a large number of landless and marginal families who depend on rearing of goats might be left out. Therefore a transformation in goat sector is essential. In view of this:

- An exclusive goat policy at the national level supported by State-level strategic implementation plan for goats is essential.
- Align small holders into clusters and support them with feeding and reproductive technologies and strategic preventive health system.
- Align goat rearing families from small and medium categories and promote them as ‘semi- intensive producers’ by providing them with latest technical and scientific methods.
- Promote large scale commercial goat breeding farms.
- Promote goat farmer schools for skill development of farmers and hands on technical training for CAHWS.
- Promote broiler goat farming for export and urban markets on contract farming basis.
- Establish a national goat development board by an Act of Parliament to consolidate coordinate and promote goat sector.

12. Annexures

1. Instruments for field work
2. Sheet for Profitability Analysis
3. Goat Value Chain Analysis – Odisha
4. Goat Value Chain Analysis – Bihar
5. Goat Value Chain Analysis – Uttar Pradesh