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THE AGRIBUSINESS PROJECT (TAP)

Bovine Meat- Value Chain Competitiveness Assessment

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Acronyms and Abbreviations

ASF	Agribusiness Support Fund
FAO	Food and Agriculture Organization of United Nations
FEG	Farmer Enterprise Group
GAP	Good Agricultural Practices
IMLP	International Market Linkages Program
NGO	Non-Government Organization
M&E	Monitoring & Evaluation
RCA	Revealed Comparative Advantage
SME	Small and Medium Enterprises
SMEDA	Small and Medium Enterprise Development Authority
TDAP	Trade Development Authority of Pakistan
TA	Technical Assistance
UNIDO	United Nations Industrial Development Organization
USAID	United States' Agency for International Development
USD	U.S. Dollar
VCP	Value Chain Platform

Exchange rate used: USD1 = PKR 105

I. Executive Summary

The five-year USAID funded Agribusiness Project, now commonly referred to as The Agribusiness Project (TAP) being implemented by the Agribusiness Support Fund (ASF) has the overall goal of supporting improved conditions for broad-based economic growth, creating employment opportunities and contributing to poverty alleviation through increases in competitiveness of horticulture and livestock value chains in partnership with all stakeholders. Specific objectives of the project are to; (i) strengthen the capacity in horticulture and livestock value chains to increase sales to domestic and foreign markets; (ii) strengthen the capacity of smallholders and farmer enterprises to operate autonomously and effectively; and, (iii) increase agriculture efficiency and productivity through adoption of new farming techniques and technological innovation among targeted beneficiaries.

The overall objective of the value chain assessment was to assess the competitiveness of the Bovine meat value chain in Pakistan. With a specific focus on: identifying the precise gaps in the value chain; the potential of Pakistan producers; validation of ongoing and planned interventions; Identification of attractive/alternative markets for the value chain products and identification of additional interventions that could enhance value for all the chain actors. Once completed, the augmented information and analysis presented in the assessment will also be used to facilitate further prioritization of the bovine meat value chain and of the potential interventions.

The assessment was conducted by refining maps of the functions and actors participating in each value chain, identifying variations in each depending on the product and relative efficiency of the different participants, and gathering as much information as possible on prices, costs, and efficiency metrics at each level, as well as volumes of product flowing through each of these channels. In parallel, world market information was obtained to assess Pakistan's recent performance in each chain's product(s), assess its relative position vis a vis international competitors considering volumes, prices, and recent export growth, and benchmark the gaps between them. Information sources used include a review of previous studies, interviews with adequate representation of all functions and participant groups in each value chain, including producers, intermediaries (contractors, commission agents, traders (beuparies), exporters, supermarkets, and input suppliers as well as key informants from among academia, research and development professionals and key databases (Pakistan Bureau of Statistics, Trade Development Authority of Pakistan (TDAP), Directorate of Market Information, Department of Agriculture Punjab, Economic Survey, International Trade Center (ITC) in Geneva and FAOSTAT).

According to the analysis, during last 2 years, the purchase prices of beef in the IMT (International Modern Trade; supermarket) have been static (USD) in spite of the increase in beef sales and the fact that more bovine animals are available for export. Despite the challenges highlighted earlier, analysis of the data shows that in last 5 years Pakistan's world market share has increased from 0.11% to 0.26%. Likewise, its Revealed Comparative Advantage Index (RCA) strengthened from 0.9 to 1.9 overall while in chilled beef exports, Pakistan's RCA jumped to 3.5.

Currently, Pakistan's share of chilled beef and carcasses in its key export markets is 97% and 88% respectively. Meat products from Pakistan only receive 60% of the world average value/kg price.

While Pakistan exports chilled beef and carcasses heavily to its 3 largest markets (United Arab Emirates, Kuwait and Saudi Arabia) it has not yet supplied cuts which have a higher value.

In Pakistan, there are following 4 sub-value chains of beef involving 4-6 actors;

- | | | |
|-----------------------|---------------------|-----------------------------------|
| 1. Butcher Retail | Dairy beef | [Value added USD 0.42/kg of meat] |
| 2. Processor/Exporter | Cow calf/bull | [Value added USD 1.52/kg of meat] |
| 3. Eid Holiday Market | Bull/heifer | [Value added USD 0.88/kg of meat] |
| 4. Roadside vendor | Male buffalo calves | [Value added USD 0.92/kg of meat] |

Some of the key constraints faced by the bovine meat value chain in Pakistan are:

- Existing livestock stakeholders have limited exposure to modern farming practices and are unable to realize the global potential of beef animals.
- Beef production is typically a spin-off of conventional dairy farming in Pakistan and not a key commercial activity in itself.
- There are innumerable small farmers spread over the irrigated area of the country where the main feed base of livestock is crop residues.
- Livestock feed sources and vaccines are available in Pakistan but the quality of local forages and vaccination materials is poor.
- The most challenging disease issue is that of foot and mouth disease and blood parasites, particularly in exotic breeds.
- The slaughtering of animals typically yields 48% meat and 52% other products such as blood, casings, leather, offal, hoof, horns and tallow.

Despite these constraints, Pakistani producers also enjoy a number of advantages. While a number of other beef exporting countries have to resort to exporting lower quality meat since their domestic consumption does not fully utilize it, Pakistan's domestic market can easily consume lower value cuts allowing producers the opportunity to focus on higher value cuts for export. Furthermore, Pakistani producers can add to their export price competitive advantage by focusing on transporting meat by sea to its key markets due to close proximity to the Arabian Gulf. Despite these opportunities, Pakistan's beef exports continue to go to a limited number of countries through traders with a heavy focus on relatively low value products (chilled beef and carcasses) which constrain the country's potential for boosting the value of its global meat exports.

For Pakistani meat producers to realize their global potential it is imperative to not only expand their participation in the GCC markets but to identify new markets in the GCC not yet fully exploited and additional markets such as in East Asia. Acquiring Halal accreditations of not only meat but also the by-products, Pakistani producers will be able to enhance the margins of abattoir and exporters. The focus should be placed on the development of Halal by-products such as gelatin and tallow (used in cosmetic and pharmaceutical products) which will substantially enhance the total value of the carcass.

Once the market development and halal certification focus is developed, a similar focus on workforce development will be needed if the farmer are to be successful. Efforts must be made to

address the lack of skilled manpower which can develop and export valuable cuts. For example, meat technology courses for supervisors and workers, institutional collaboration with modern abattoirs and courses and certifications in specific skill areas will be important to fill the current skill gaps.

Efforts must also be made to facilitate contractual farming with feedlots. As reliability, quality and traceability become global standards, Pakistan will face a series of challenges. But these will be rewarded by the market and Pakistan is well positioned to expand its supply to these markets. Commercially viable rearing of male buffalo calves has the potential to achieve significant added value currently being missed. The price control regulations currently in place need to be removed and regulations need to focus on adherence to global meat standards instead.

Efforts must also be made on the regulatory side for which an effective Livestock Development Body is imperative as it can easily interface with the government to improve regulations, affect Halal Certification, participate in International marketing and improve the global perception of Pakistan's food products

In sum, Pakistan has strong comparative advantages in this sector, which include its geographic location that allows it to supply chilled meat to growing sectors: GCC and East Asian markets. To close the gap in price and sustain high growth rates, Pakistan needs to focus on improving the quality of its meat, diversify its product offering and gain access to new markets whilst improving Halal certification systems and its country brand in this sector.

II. Background

The USAID's Agribusiness Project, now commonly referred to as The Agribusiness Project (TAP) is being implemented through Cooperative Agreement (No. AID-391-A-12-00001) by the Agribusiness Support Fund (ASF). ASF, a Pakistani non-profit company registered under section 42 of the Companies Ordinance of 1984 was formed to provide demand-driven technical and managerial assistance and private sector service delivery mechanisms throughout the agribusiness value chains including supply inputs, production, processing, and market access for domestic and export markets.

The five-year TAP project began on November 10, 2011. The overall goal of the project is to support improved conditions for broad-based economic growth, create employment opportunities and contribute to poverty alleviation through increases in competitiveness of horticulture and livestock value chains in partnership with all stakeholders. Specific objectives of the project are to : (i) strengthen the capacity in horticulture and livestock value chains to increase sales to domestic and foreign markets (ii) strengthen the capacity of smallholders and farmer enterprises to operate autonomously and effectively and, (iii) increase agriculture efficiency and productivity through adoption of new farming techniques and technological innovation among targeted beneficiaries.

The ASF had developed some basic information on many of the selected value chains targeted by the project. This information has been published in the following reports:

1. Horticulture (Peaches, Dates, Potatoes, Chilies) Value Chain Assessment Final Report for the Agribusiness Project (31 December 2012)
2. Dairy Value Chain Assessment Final Report for the Agribusiness Project (24 February 2013)
3. Meat Value Chain Assessment of the Livestock Sector of Pakistan (2 November 2013)

The present report is one of a series resulting from the effort to deepen the analysis provided in these reports by assessing the competitiveness of the selected value chains. The competitiveness assessments sought to:

- a) Analyze the precise gaps that impede the realization of the full potential of Pakistan producers in the selected value chains;
- b) Validate ongoing and planned interventions;
- c) Identify attractive, alternative markets for the value chain products;
- d) Explore additional interventions that could enhance value for all the chain actors;
- e) Help prioritize VCs and the potential interventions in light of the augmented information and analysis;
- f) Facilitate future M&E with the information in the assessment

The methodology employed included:

- Refining maps of the functions and actors participating in each value chain;

- Identifying variations in each depending on the product and relative efficiency of the different participants;
- Gathering as much information as possible on prices, costs, volumes and efficiency metrics at each level;
- Obtaining information from global market sources that could a) evaluate Pakistan's recent performance in each chain's product(s), b) assess Pakistan's relative position versus international competitors, and c) analyze volumes, prices, and recent export growth to benchmark performance;

The information sources used include a review of previous studies, interviews with representation of all function and participant groups in each value chain, including producers, intermediaries (contractors, commission agents, traders, exporters, supermarkets, and input suppliers as well as key informants from among academia, research and development professionals.

The data presented in the reports primarily come from reports and databases published by the Pakistan Bureau of Statistics, Trade Development Authority of Pakistan (TDAP), Directorate of Market Information, Department of Agriculture Punjab, Economic Survey and other domestic and international secondary sources of information, particularly international databases such as International Trade Center (ITC) in Geneva and FAOSTAT. For each specific chain, various knowledge and information sources available on the worldwide web were utilized.

Marcos Arocha, the international value chain consultant from JE Austin Associates assisted in the design of the overall framework provided guidance throughout the elaboration of the report. Assistance was provided to the value chain consultant by ASF staff to set up these meetings in the various districts where interviews were conducted. Finally, the Rapid Market Assessment conducted in parallel by a JE Austin consultant, Matt Brown, also informed this work. These documents were designed to focus on the competitiveness of the selected value chains. However, they shouldn't be considered final. They were conducted in a relatively short time (about 8 weeks) given the previous work done. Nevertheless, VC strategies should be "living documents" and continuously be updated as potential interventions are further tested and more information is uncovered.

Introduction

The main objective of this study is to analyze the potential of beef and its allied business opportunities for Pakistan producers. Centuries old traditional animal keeping and trading practices have deep roots and many livestock stakeholders have only limited exposure to modern farming practices and as such are unable to realize global potential of beef animals.

During 2012-13, the livestock sector is extremely important to Pakistan's economy and to the livelihoods of those in rural areas including low-income populations. Livestock contributed 11.9% of total GDP in Pakistan and 55.4% of the agro-livestock sector. Gross value addition increased 2.9% as compared to previous year according to the Pakistan economic survey 2012-13. The cattle and buffalo population of the country is approximately 72 million heads and ranks 5th in the world in terms of its size. During the last year there has been an increase of 2.4% of dairy animals and milk production increased by 3.2%. Meat production went up 4.5% (Pakistan Economic Survey 2012-13) probably because of culling of low or non-productive cows and/or buffaloes.

In spite of the many challenges, described below in this report, Pakistan exports of beef have been growing at 30% per year in the last 5 years (2008-2012), reaching \$101.7 million in export earnings. This strong performance increased Pakistan's world market share from 0.11% to 0.26% which is indicative of a strong comparative advantage in this sector.

Nevertheless, exports are concentrated in chilled carcasses supplied to the Gulf Cooperation Council (GCC) countries, and the average price Pakistan producers receive per ton in this segment is only 60% of the world average¹. Additionally, there are indications that this market segment may be reaching a point of saturation. This does not mean that Pakistan should turn to lower-value frozen products that make up about half of the world market in meat. Rather, Pakistan can continue to exploit its comparative advantages in the chilled bovine meat sector by targeting higher value chilled boneless cuts, which make up 24% of the world market as opposed to chilled carcasses which represent only 6% of world trade. Pakistan has opportunities to export not only to the Gulf countries but also to East Asian markets.

Pakistan has strong comparative advantages in this sector, which include its geographic location that allows it to supply chilled meat to growing sectors: GCC and East Asian markets. To close the gap in price and sustain high growth rates, Pakistan needs to focus on improving the quality of its meat, diversify its product offering and gain access to new markets whilst improving Halal certification systems and its country brand in this sector.

¹ For 2012, according to International Trade Center (ITC) in Geneva, based on UN COMTRADE data.

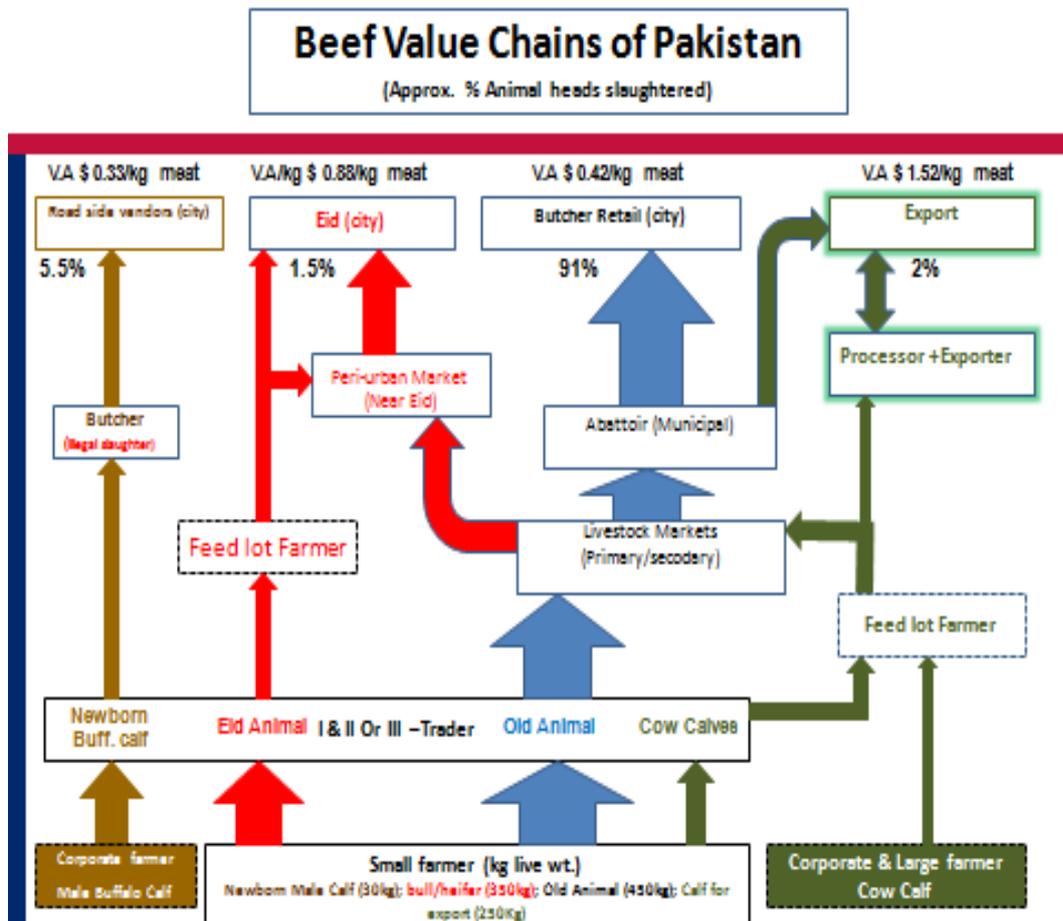
III. Value Chain Structure

In general, beef farming is not engaged in as a business in Pakistan but rather as a low value by-product of traditional dairying. This is one of the main constraints to this sector’s growth. Pakistan’s 72 million cattle and buffalo population is widely spread all over the eastern border along the rivers. There are innumerable examples of small farmers spreading all over the irrigated and semi arid districts of the country. It is estimated that over 70% of these are small farmers. Some 25% of farms have 10 to 20 cows/buffaloes and only 5% of farms have over 20 head of cattle. Male cow calves are raised mainly by women from small farmer households and are fed on crop residues. During the last 5 years a few larger dairy farms based on imported cattle have been established near larger cities, with herd of 300 to 3000 cows.

If we segment production by the end market and type of animal sold, we can clearly distinguish between 4 value chains of beef that are coexisting in (see graphically in Fig. I below). These are

- 5. Butcher Retail [Dairy beef (age~2-15+ years)]
- 6. Processor/Exporter [Cow calf/bull (age ~1- 4 years)]
- 7. Eid Holiday Actors [Cow bull and heifer (age ~ 2.5-8 years)]
- 8. Roadside vendor [Newborn male buffalo calves (age~ 0-20 days)]

The basic structure of Beef Value Chain of Pakistan is illustrated in Fig. I (below)²



² Based on survey of animal markets, abattoirs and personal communication with stakeholders

All of the main 4 beef value chains described above originate from small farmers and pass through 2 or 3 traders (Bueparis), livestock market(s) (Mundi) to reach the end market actor. Small farmers sell milk to meet day to day expenditures, but sell beef animals for other cash needs. Local traders understand the urgent cash needs of the farmers and deal accordingly. Traders dealing with beef animals generally avoid purchasing dairy animals. Typically, the farmer allows the trader to take the animal and the trader pays back the settled amount after selling the animal in the open market. A beef trader avoids investing his own money except when he has supply order of specific type of animals. As smart phones proliferate, farmers may be able to increase their bargaining power through better price discovery.

Traders to trader deals are common in Pakistan particularly when a trader has an order to supply specific types of animal to the exporter or processor. These deals are either carried out through a bargaining process or at a certain fixed profit/animal, where the trader is trusted.

Traders supply animals to abattoirs. It is common for exporters to develop a network of traders in which one trader coordinates between 10-20 local traders for an efficient supply of the specific type of beef animals from different areas of the country. Later, the coordinating trader receives the price of animals after slaughtering and weighing of their carcasses (a 3-7 day process). The exporter prefers to deal with one trader, who is also responsible to take back any rejected animals after a pre-slaughter examination. The traditional beef supply chain is trader oriented; nevertheless the vast spread of landless livestock farmers, with a smaller animal holding, creates a role for traders in all value chains. Conversely, increased farming size reduces the number of traders involved.

All livestock populated areas have weekly and monthly livestock markets which are regulated by the local government through contractors. Market days are fixed diligently to avoid any overlap between the markets of comparable size in nearby locations. Larger beef markets are scheduled for meatless days, (Tuesday & Wednesday) to conserve the animals. Some 3-5% of the animal price is charged as a market fee from the buyer for each deal. Market contractors solicit livestock transporters by offering various service and cash incentives, which are partly shared with the local traders.

There are seasonal trends in the prices of beef animals. On the supply side, factors such as floods, fodder scarcity, sowing season and inadequate winter housing for animals increase the turnout of beef animals to the markets with a corresponding contraction in prices. On the demand side, large scale export demand results in a price increase of animals.

Butchers retail approximately 91% of total beef production, which originates from culled dairy buffalo or cows which are no longer productive for dairy purposes. Culled animals are sold at 1/3rd of the value of milking animals. Value added (all revenue minus costs) throughout this value chain is approximately USD0.42/kg of meat. The dressing percentage $\{(\text{carcass wt}/\text{live wt}) * 100\}$ of meat in old/culled animals ranges from 40-46%. Butcher shops observe 2 meatless days a week. For full price- cost-ladders and assumptions please see Annex-I.

The processor & exporter value chain, which moves male calves, make up 2% of all animals slaughtered annually. This value chain exhibits the highest value added per kg or about USD1.52/kg of meat. Exportable meat can only be slaughtered and processed in approved abattoirs. Criteria of age, breed (% of exotic blood) and sex of animals are set by the importer. More than 98% of these animals come from small farmers with the balance from feedlots. The dressing % with fattened

calves is 56% versus 52% for non-fattened ones. Uniformity of weight, age and size can only be ascertained by developing the feedlot system, which holds the potential of allowing the exporter to seek more sophisticated markets. For full price-cost ladders and assumptions to calculate the value added of the chain, please see Annex-II. However, feedlot operations are having a hard time making viable margins, partly because market linkage to higher value cuts sales are absent. Should Pakistan be able to develop new higher value cuts of meat as viable markets, this could open the door to expanded feedlot operations and more efficient production of high value exportable halal beef.

The Eid value chain is a seasonal market in which the cow bull or heifer are sold once a year to the broad population at affordable prices for sacrificial purpose. Eid bull or heifers are raised by the subsistence farmer from far flung areas where milk prices are lower. The value added throughout the chains is USD0.88/kg of meat but having a slower turnover as animals are sold once a year and they have to be at least 2.5 to 4 years of age. Moreover, oversupply of Eid animals either plunges the price drastically downwards or presses on both trader and farmer to sell the animal at the next Eid. The feeding costs of Eid animal increases with age; in addition market demand of the Eid animal drops significantly, after 4 years of age. These Eid surplus animals could be a source of exporting quality meat as chilled boneless cuts in the existing markets. Saudi Arabian markets prefer to import the meat of indigenous cattle breeds. Please see Annex III for the value added calculations.

Newborn male buffalo calves are either slaughtered or raised carelessly in areas where milk prices are relatively high such as peri-urban dairies or in large dairy farms. Nearly 8 million male buffalo calves are slaughtered prematurely as viable rearing of these calves has long been challenging.

Services provided to Businesses in the Bovine Value Chains

Feed: Small farmers grow fodder and mix wheat straw to feed their animals. The ratio of straw used depends upon the availability and price of fodder. As such, animals face two seasons of fodder shortages from May-July and from October-December. Progressive farmers manage fodder shortages by making silage. Corporate dairy farms have developed fodder suppliers and silage (bales) suppliers. Beef animals are not common consumers of silage as they are mainly raised by small farmers. Feed supplements, mineral mixtures are available in the market.

Animal Health: Animal health inputs to the beef value chain include vaccines, medicines, veterinary services, feed supplements and breeding services. Health services are provided by government and private veterinarians. There are 4 veterinary educational institutes and faculties in different parts of the country that provide veterinary education. These institutes provide training on the basics of disease diagnostics, treatments and disease prevention. District diagnostic laboratories are still in the developmental phase. Health services including vaccination are primarily used for dairy and Eid animals. Occasionally, male cow calves are de-wormed and vaccinated. Newborn male buffalo calves are not considered valuable enough to warrant any veterinary service and many of the older dairy animals are similarly given very little health attention. Government and private vaccination manufacturing units produce animal vaccines, which can also be imported. Prices of imported vaccines are much higher than local vaccines, although farmers near the cities may often use imported vaccine for their livestock.

The most challenging disease issue is the prevalence of blood parasites. Exotic breeds are more susceptible to these pathogens compared to local breeds. Managing exotic animals during summer months is a real challenge for which housing with fans, balanced feeding and management practices are essential. Therefore, small farmers tend to raise local or at most crossed-bred varieties (local x exotic). Considerable improvement in animal health services around big cities continues which is especially important for those working with high-yielding exotic dairy animals. The output value associated with these exotic dairy animals seems to be justifying the needed services.

Livestock housing materials, along with the design and construction skills are available. Locally manufactured veterinary instruments are of good quality. Presence of fungal toxins and pesticide residues in feed and animal product is a current concern of dairy processors and there has been a significant success in controlling of aflatoxin residues in milk. Aflatoxin is very serious and highly carcinogenic toxin that develops in fungi and proliferates in hot, humid environments. It can be ingested by cows and transmitted in milk.

IV. Market Trends

Domestic Market

Traditionally, people living in Pakistan consume meat, milk, fish, eggs and lentils to meet their protein requirements. Per-capita consumption of meat will have nearly tripled in Pakistan between 1993 and 2020, but will still be far below developed country levels. Population growth, urbanization and growth in per-capita incomes will all boost meat demand in Pakistan for the foreseeable future (Table-1).

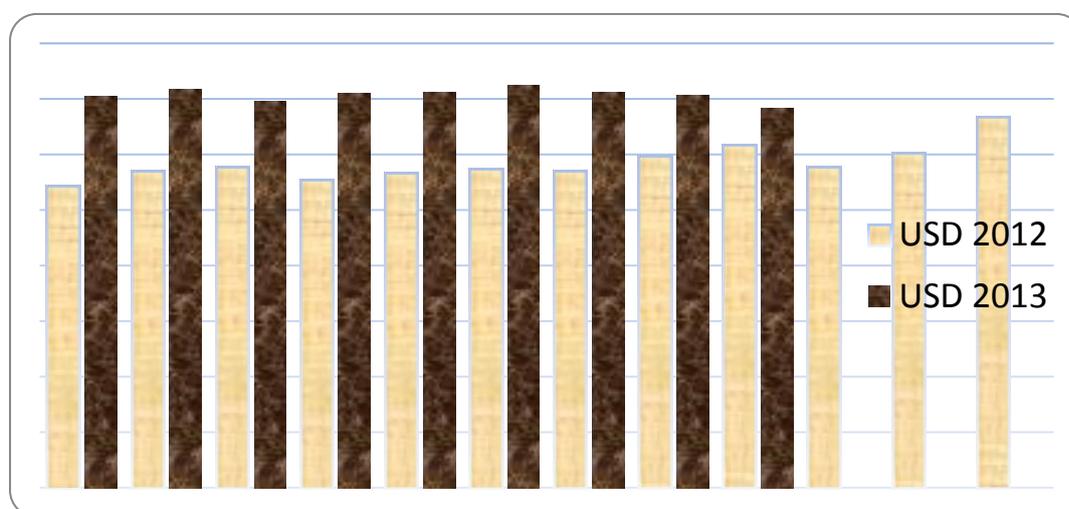
Table: I Per Capita Meat Consumption (kg) 1983-2020

Countries	1983	1993	2020
Developed world	74	76	83
Developing world	14	21	30
Pakistan	11	16	47

Source: Delgado et al. 1999, Livestock to 2020, the next food revolution & GOP 2003, TCP-PAK-0168 Livestock Action Plan Draft Report MINFAL

Because of wide variations in data on livestock production, inferences must be taken with caution. During the last 2 years, the beef purchase price for “International Modern Trade” (IMT); supermarkets) has been static in spite of the increase in beef sales (Fig. II), indicating that supply has kept up with demand.

Fig. II Beef Purchase Prices of Local Supermarket USD/Kg (IMT)



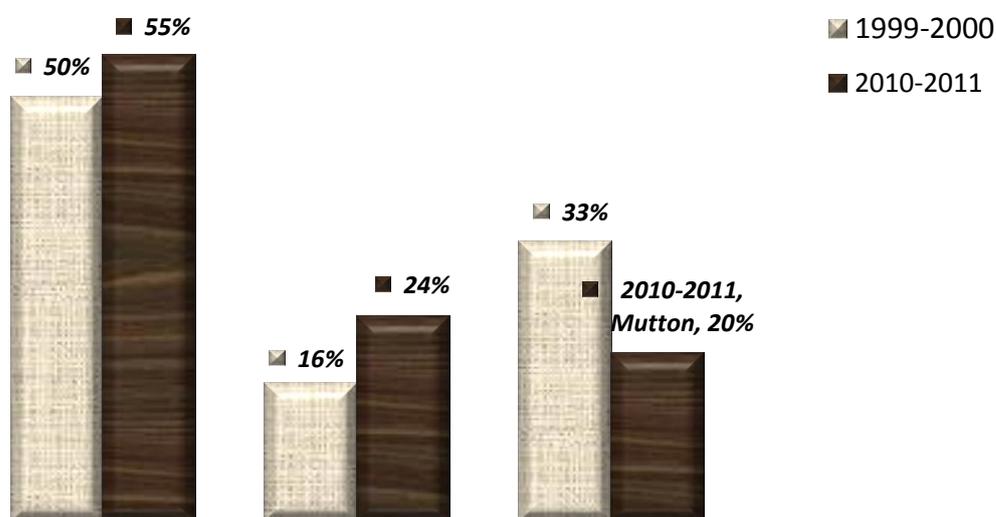
Beef prices have increased more or less in line with inflation over the last 5 years. Mutton prices are almost twice the price of beef on a per kilogram basis while poultry is cheaper than beef. Indeed, overproduction of poultry in the last two years has been a factor capping the price increases in red meats particularly in the case of beef (Table: II).

Table: II Meat Purchase Prices (USD/kg) Trends of Local Supermarket (IMT)

Year	Beef	Mutton	Poultry
2009	1.6	2.7	1.2
2010	2.1	4	1.6
2011	2.4	4.7	2
2012	2.6	5.1	2.1
2013	2.8	5.3	2.3
Annual Increase%	11%	12.1%	12%

During last decade, consumption of mutton declined 13% with poultry replacing 8% and beef the remaining 5%. One of the reasons of reduction in mutton market share is higher price which may be attributed to increased exports to GCC countries. Price competitiveness of poultry accounted for its increase in demand. In Pakistan, red meat butcher shops have added poultry to their offering and if this trend continues more bovine animals and meat could be available for export, (see Fig. III below).

Fig: III Percentage Shift in Meat Consumption in Pakistan in 2000-2010



Source: I -Agriculture Statistics of Pakistan 1999-2000 II – Pakistan Economic Survey -2010 - 2011

Red meat in local market is sold in “wet” form (99%). Animals are slaughtered during late night hours and transported to shops without a cold chain. During early hours of day beef is sold wet. It is important to note that local beef consumption is primarily based on dairy culled animals, as most Pakistani consumers cannot afford to consume younger beef (less than 4 years) which is more expensive, on a regular basis. With the increase in dairy farming more male cow and buffalo calves

will be available for fattening. Development of a feedlot system will be important to harness the growth potential of male calves and to develop high value products for the local markets.

With the development of multinational fast food restaurants, a beef-eating trend is developing and appears to be catching on with the urban youth. Presently fast food stores are importing high value beef patties from Africa or Australia via the Gulf. In villages, dairy beef is not preferred, instead meat from the buffalo calf is consumed. Similarly, at marriage functions in villages well fed buffalo calves are slaughtered and served.

Export Market

World trade of beef meat is conducted primarily in two forms, fresh/chilled and frozen. The World Market for chilled beef meat has been growing at 1% per year in volume terms, and at 4% in value terms from 2008-2012, showing a tendency towards increasing prices. However, the market for frozen beef has achieved higher growth rates at 5% per year in volume and 11% per year in value.

According to data from the International Trade Center (ITC) in Geneva, in terms of volume, frozen meats have already surpassed chilled/fresh exports. In 2012, nearly 4.5 million tons of a total of 7.7 million (57.7%) were frozen exports. Nevertheless, in terms of value, fresh bovine meat still retains a share of 43%, as a tonne of fresh meat was exported, on average, at a price of \$6,256 USD compared with an average of \$4,084 USD for a tonne of frozen bovine meat. (Table III)

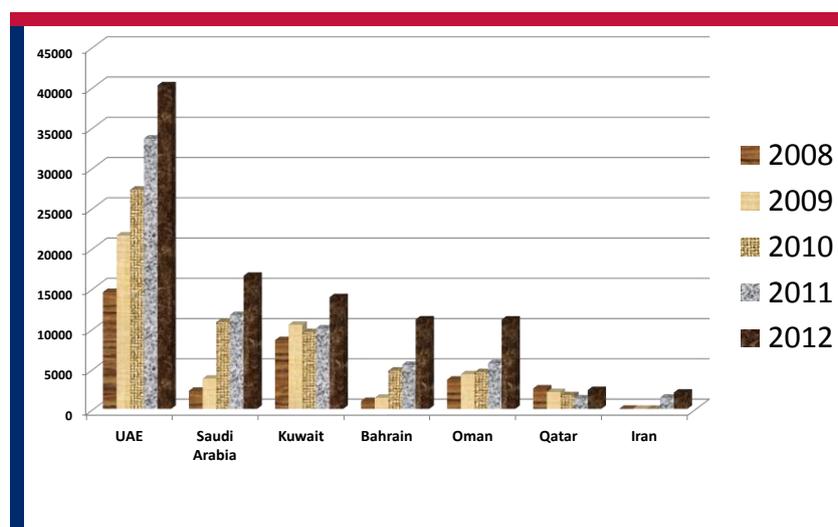
Table: III Bovine Meat World Trade by Segment

	Value, USD	Volume, Tons	Growth, Value	Growth, Tons	Avg. Price (USD/tonne)
Frozen	57%	58%	11%	5%	\$4,084
Chilled	43%	42%	4%	1%	\$6,256

These growth rates, though, should be interpreted with caution. While world trade seems to be trending towards frozen exports, this shouldn't be interpreted as a lack of demand. Rather, the explanation may lie in the complicated logistics to serve a market with fresh/chilled beef, and the fact that main producers and exporters have not been able to supply these markets. As such, producers that are able to do this due to an advantageous geographic location nearer to high demand markets can reach the markets with a higher value product.

Over the same five-year period, Pakistan exports grew at a rate of 30% (value terms) and 22% in volume terms for chilled beef, and 19% and 30% for frozen beef, respectively. (See Fig. V below)

Fig. V Pakistan Beef Export Value (000 USD)



Pakistan’s competitiveness in global markets has been improving. Strong export growth, higher than global market growth, has resulted in Pakistan more than doubling its market share in the last four years from 0.11% in 2008 to 0.26 % in 2012. Pakistan’s Revealed Comparative Advantage (RCA) Index (RCA) strengthened from 0.9 in 2008 to increase to a more robust 1.9 (Table IV- below). It must be noted, though, that if we consider only chilled beef exports, Pakistan’s RCA jumps to 3.5, reflecting Pakistan’s strong comparative advantage in this sector.

Table IV: Pakistan’s Beef World Market Share and RCA

	2008	2009	2010	2011	2012
Revealed Comparative Advantage (RCA)	0.9	1.1	1.4	1.3	1.9
World Share (%)	0.11	0.16	0.2	0.19	0.26

The RCA index provides a rough quantification of comparative advantage, accounting for the relative efficiency of producing different goods in the home country compared with the rest of the world. The RCA denotes relative efficiency indirectly, based on trading patterns that emerge from actual market transaction. It must not be confused with competitive advantage which requires many other elements to be in place including analysis of appropriate marketing links and input supply channels, financing mechanisms, uniform product quality, and many other demand requirements. In other words, comparative advantages can be built into competitive advantages. An RCA greater than 1.0 indicates a comparative advantage for that item, whereas an RCA lower than 1.0 identifies a comparative disadvantage.

In spite of robust export growth and high RCA, most of Pakistan export (96.8% when measured by volume) are of fresh beef, and nearly 88% are in the lowest value category of carcasses and half

carcasses as oppose to boneless and bone-in cuts (for the exact breakdown, see Table V-Pakistan supply below).

Table: V Pakistan Meat Value/kg vs. World

		Pakistan \$ Value/kg	World \$ value/kg	% of World value
Chilled	Carcass	2.8	4.68	59.81%
	Bone-in cuts	3.05	5.08	60.09%
	Boneless cuts	5.71	7.23	78.94%
Frozen	Carcass	3.28	4.54	72.14%
	Bone-in cuts	2.93	3.63	80.69%
	Boneless cuts	4.09	4.10	99.73%

Pakistan’s chilled carcasses receive only about 60% of world average value/kg price (2.8 USD per kg compared with 4.8 USD per kg). In fresh boneless cuts and frozen categories the average price Pakistan obtain varies from 72-80% of the world’s average, but they represent a negligible share of Pakistan’s exports (3.2% collectively). Further analysis of Pakistan’s exports reveals that the country may not be able to continue that strong export growth unless it starts expanding into boneless cuts and this also represents an opportunity in markets that Pakistan currently serves. Pakistan currently supplies 98% of all fresh carcasses imported by its 3 key markets (UAE, KSA and Kuwait), the three major destinations at which 71% of Pakistan’s exports arrive. However, Pakistan has yet to supply fresh boneless cuts to the UAE, and its share of market in KSA and Kuwait is but 0.02% and 0.1%, respectively (Fig. VI below). Pakistan accounts for between 5 and 16 % of the import market for all beef products, taken as a whole, in these three countries.

Table: VI Pakistan’s Share in 3 Largest Markets broken by category

	UAE	KSA	Kuwait
Chilled			
Carcass	98%	98%	98%
Bone-in cuts	50%	87%	66%
Boneless cuts	0%	0.02%	0.1%
Frozen			
Carcass	7%	5%	0%
Bone-in cuts	9%	0.1%	6%
Boneless cuts	0.01%	0%	0%
Total Pak Export (Ton)	13674	6044	5560
Pak Overall Share (%)	16	5	14

If we further examine these 3 key markets (Table VII below), total chilled carcasses imports represent only 5-15% of their overall market, but higher value fresh boneless cuts represent between 8-19% of imports in these markets where Pakistan’s share is negligible. Likewise, when

considering world trade as a whole, chilled boneless is a much larger segment (24%) compared to chilled carcasses (only 6%). This represents a major potential untapped market for Pakistan.

Table: VII Pakistan’s Key Market & World (ton %)

	Pakistan (supply)	UAE (Demand)	KSA (Demand)	Kuwait (Demand)	World Trade
Chilled					
Carcass	87.9%	15%	5%	13%	6%
Bone-in cuts	8.2%	3%	0.6%	1%	12%
Boneless cuts	0.7%	18%	9%	10%	24%
Frozen					
Carcass	0.1%	0.1%	0.9%	0.1%	0.4%
Bone-in cuts	0.6%	2%	3%	1%	3%
Boneless cuts	2.5%	63%	83%	74%	54%

In summary, it appears that exports of chilled carcasses may be reaching a point of saturation to these markets and will constrain Pakistan export growth in the future. Diversifying into chilled boneless and cuts would be essential for both volume and for higher per unit price. Further, exporting boneless allows efficient use of labour, space and supplies bones to the local industry that can produce high demanded products such as halal gelatine and Di-calcium Phosphate. Transport of chilled meat by sea can further add to Pakistan’s location advantage. While the market for frozen is large and growing, it is a lower value product that also faces head-to-head competition by India, a country with the largest buffalo population in the world.

V. Conclusion: Key Constraints and Recommendations

In spite of the many challenges facing the beef meat value chain, exports have grown strongly in recent years. Nevertheless, those exports are heavily concentrated in the least attractive segment of the fresh beef category, and there are signs that this market segment is becoming saturated. Even with continued growth, carcasses provide only limited value added that could be accruing to Pakistan. As 75% value of the beef animals belongs to the upper part of the bull body, exporting the carcass as a whole does not allow the benefits to accrue to the value chain actors in country, but rather this value is realized in the importing country. Meanwhile, Pakistan's labor cost advantage could make it an attractive supplier of meat with higher value added, while decreasing the shipping costs of the final product. There are market restrictions for a few countries, namely China for beef export.

The report above provides ample evidence that Pakistan has considerable comparative advantages in the sector. It is the only country well positioned to supply fresh beef to the GCC countries, and thereby avoids head-to-head competition with other suppliers. Likewise, Pakistan has a growing domestic market where it can sell the lower value meat, which would allow it to export high-value meat and give it a relative advantage to other countries that may face more difficulty in utilizing the lower value meat.

Pakistan has an opportunity to realize the potential of those comparative advantages and capture a bigger market share in its current markets if it diversifies into boneless and specialized cuts, and can also take advantage of marketing its meat exports into the wider Halal market in East Asia.

Key Constraints

Limited access to global markets: As elaborated in previous sections, Pakistani exports of beef have thus far been limited to 6 countries in the GCC and Iran. Likewise, the excessive concentration in exporting carcasses only provides access to a certain type of intermediary (the traders) in the country of destination. Closer linkages to end markets would enable Pakistani producers to receive the market signals to improve and develop their product.

Lack of Processing Skills: Lack of worker skill is a constraint to produce valuable quality cuts for current and future markets. Abattoirs workers and their supervisors need to comprehend the basic concepts of meat hygiene and best practice of meat technology. In the future, development of skilled manpower is going to be a continuous challenge requiring a multifaceted approach.

Infrastructure: In beef value chains, live animal transport incurs financial and meat quality losses. Lack of loading platforms and designated cattle transport with non-slip truck flooring cause bruises, stress and shrinkage. Rehydration is required to prevent an unattractive dark meat colour. There is often inadequate hanging space for ageing, inadequate tender-stretch and inadequate chilling to the required temperature gradient at available facilities

Availability of Air space during high season: Meat demand in the Gulf countries increases 3 to 4 times during Ramadan but meat exporters face a limitation of air cargo space. The space issue will become more acute as Ramadan will coincide with the mango export season for next several years.

Halal and traceability: The very name of Pakistan provides credibility with regard to Islamic Halal practices, but Halal Certification is essential for the high end markets of East Asia and North Africa. Development of feedlot farming can play an important role in improving the quality, reliability, documentation and traceability of beef, which are becoming more and more important in destination markets. Typical slaughtering of animals yields 48% of meat, 40% by-products (blood, casings, leather and tallow) and 13% wastage. Halal accreditations of by products will enhance the margins of abattoir and exporters and represents an untapped opportunity that should become an industry priority.

Local meat price control: Implementation of local price control on meat is not only discouraging butchers but is also enticing them to slaughter emaciated animals. Consequently, affluent consumers avoid buying beef; as a result farmers get no price incentive for high quality animals. Likewise, classification and grading of beef is not possible when there is local price control. These industry-specific policy reforms are highly recommended. Meanwhile, regulation *is* important to enhance the consumer confidence and export certification of Pakistani meat. There *is* a role for proper regulation but it must now change to focus on enhancing the competitiveness of the meat sector. For policy makers concerned with farmer or consumer welfare, global consensus is now clearly in favour of moving from regulated prices to providing income support for target populations as a far more efficient and less market-distorting mechanism.

Recommendations

The following are a few interventions that USAID and ASF can consider to assist realize the potential of the bovine meat sector in Pakistan.

- 1. Facilitate market linkages, halal certification and branding with technical assistance:** The project should assist interested exporters to identify and contact new buyers in the GCC and East Asia. It should facilitate not only attendance at relevant Trade Missions, but provide and promote the Halal element of Pakistani beef. The project could employ a marketing consultant to set up meetings with more sophisticated buyers that can in turn provide valuable feedback to Pakistani exporters. This would likely also require developing an improved product, as detailed in the paragraphs below.
- 2. Initiate workforce development initiatives based on market needs with certifications:** Lack of skill in meat processing is the main reason for not exporting boneless and other cuts. Inadequate design and use of existing infrastructure in abattoirs is another reason for the inability to develop further cutting of carcass beef and to maintain cold chains. There is not a single institute in the country where any level of meat technology is either taught or even discussed. In the traditional meat sector, butchery skills have been based on the family experience in which animals were slaughtered early in the morning and meat has been sold in next 5 to 7 hours; a time that does not allow meat to get bad. After slaughtering, meat has a finite age unless it is processed efficiently; there is a chance that it may lose its quality

moreover, as we develop further cuts more efficient abattoir and skilled workers and managers are needed. Short courses and meat technology diplomas and/or degrees can be conducted through institutional collaboration with modern abattoirs (demo centre) to train workers and professionals in the areas of; i) pre-slaughter handling of animals; ii) meat inspection; for food safety of meat products, iii) abattoir's technical operations, iv) development of meat cuts and various products and v) good hygiene practices and sanitary control of meat can ensure a significant increment in both local beef consumption and its exports.

- 3. Improve the supply, traceability of meat and encourage improved supply through feedlot operations:** Without securing the access to more animals future market potential will not be achieved. Facilitating contractual farming with feedlots is a promising activity that could improve the reliability and traceability of meat supply while improving its quality. Alternatively or in parallel, assistance could be provided to transform small farmer's fattening practices to feedlot-like fattening.
- 4. Experiment with new cuts/beef products:** Methodical experimentation on feasible rearing of male buffalo calves and linkage with high end export market can help to divert this value chain of large numbers of calves to the highly value added segment of beef exporting. The possibility of developing a pink veal product is another option that may justify higher feeding cost of the newborn male buffalo calves. Encouraging the export of fresh boneless cuts with initial technical assistance could improve the feasibility and attractiveness of Pakistan expanding into high end markets. If the project can work with pioneering exporters to demonstrate the profitability of new products and new markets, others will follow the demonstration effect if such profitability is proven and initial logistical and/or policy obstacles can be overcome that may only come to light after initial forays into these markets. The potential for scalability is such that it would justify the project working to assist in helping to open these newly emerging product-market opportunities. The authors believe that developing these higher end products will be further rewarded by medium and high income Pakistani-consumers, providing a further virtuous cycle impetus.
- 5. Modernization of policies and regulations: eliminate price controls and regulate the adherence to global meat standards:** Price control and meatless days are observed by traditional butchery shops as there is neither any meatless day nor any price control on the sale of beef at modern meat shops. And that has allowed modern shops to sell value added beef products 7 days of week. Implementation of an appropriate regulatory framework for the adherence to global meat standards is a requirement for the high end markets of GCC and new markets of East Asia. This study specifically recommends updating Pakistan's Slaughter Control Act of 1963 to allow for the future development of the beef sector. Pakistan's growing beef exports in response to increasing demand also creates environmental pressures, which can be contained by meat processing according to hygiene and environmental standards under an updated regulatory and legislative framework.
- 6. Assist with private public dialogue and provide international best practices technical assistance in the reform process.** It is extremely important that the Government implements this regulatory system with the close collaboration of the abattoir and exporter associations to avoid inappropriate regulations or overly bureaucratic obstacles. Initially,

guidance or leadership of an agency or academic institution(s) may be needed to organize an effective Association of abattoirs or exporters. This is an appropriate role for a “neutral broker” such as the ASF and a particularly appropriate area for USAID involvement given American expertise in the beef sector (although Australian and New Zealand expertise is also world class). The appropriate zoning and locations for abattoirs will be important for managing both solid waste and untreated effluents. In major cities, provisional slaughtering facilities and regulations need to be developed to govern the slaughtering of Eid animals (approximately 3 million beef animals in 3 days). Street slaughtering results in the wastage of animal by-products that are valued at one tenth of animal sales income. In coming years as Eid is going to be in the hot summer months. Therefore, preserving meat and its by-products will be challenging and public health issues need to be addressed. However, this will also be an opportunity for capturing higher value during this peak period.

- 7. Support a Livestock Development Body:** During the validation workshops conducted as part of this study, many participants expressed the absence of an effective association for supporting the development of the sector. They cited the example of Australia and the UK, where the government matches funds from the private sector, raised by levies, to conduct R&D, disseminate improved practices and implement other activities in support of the sector and in the benefit of all value chain participants. This approach has been used widely by industry competitiveness councils, including many sponsored by USAID in other countries. A beef competitiveness initiative, supported by an inclusive association or council of relevant members from throughout the value chain, could be institutionalized as the major catalyst of private sector change and the major partner in public-private dialogue, which today takes place in a less organized fashion. The project could assist such as group to benchmark their current competitiveness against other global competitors and to identify specific initiatives to vastly boost Pakistan’s exports with the attendant employment advantages. The project should support the emergence of such a body, whether it is composed of only private members or a public-private body. If effective, this body could be a good interface with the government to improve regulations, negotiate freight space with the airlines, consolidate cargo, improve Pakistan’s perception in export markets and support Halal branding, among many other worthy activities.

Annexure-I: Dairy Beef (Old) Animals (450 kg)

Selling Price (USD) and Margins along the value chains			
Actor	Margin per animal	Selling price per animal	Expenses per animal
Farmer	0	360	360: 4-5 Lactations barely cover expenses
Trader I	15	380	365: Purchase 360; Feeding 4; transport 0.5; weight loss 0.5
Trader II	16	420	404: Purchase 380; Feeding 7; transport 8; weight loss 4; local tax 5
Butcher	45	490	440: Purchase 420; Market tax 8; transport 8; weight loss 4; Slaughtering charges 5

Annexure-II Male Cow Calves (250 kg) (2 month fattening)

Selling Price (\$) and Margins along the value chains			
Actor	Margin per animal	Selling price per animal	Expenses per animal
Farmer	50	240	190: Milk 75; Feeding 85; Labor 20; Mortality 10
Trader I	7	250	243: Purchase 240; Transport 2; Feeding 1
Feedlot Farmer (2 mos.)	7	365	359: Purchase 250; transport 3; Feeding 96; vaccination etc.2; labor+utility 6; Mortality 4
Trader I	4.7	370	365.3: Purchase 365; transport 0.2; weight loss 0.1
Processor/ Exporter	114	549	435: Purchase 370; Processing & transport 40; Freight 75; [hide+head+hoof+viscera: (-50)]

Annexure-III: Eid (Sacrificial) Cow/Bull (350 kg)

Selling Price (\$) and Margins along the value chains			
Actor	Margin per animal	Selling price per animal	Expenses per animal
Small Farmer	24	500	476: Feeding 420; management 50; vaccination/medication 6
Trader I	40	580	540: Purchase 500; Feeding 25; transport 6; local tax 4; labor 3
Trader II	54	660	645: Purchase 580; Feeding 40; transport 7; local tax 8; labor 10
Trader III	59	780	721: Purchase 660; Feeding 35; transport 6; local taxes 10; labor 10
Family (city)	(-23)	(764) Sacrificed	16: Purchase 780; Market tax 10; transport 10; weight loss 3

Annexure-IV Newborn Male Buffalo Calf (30 kg)

Selling Price (\$) and Margins along the value chains			
Actor	Margin per animal	Selling price per animal	Expenses per animal
Small farmer	-7	15	22: Transport 2; Feeding 20;
Trader II	2	18	16: Purchase 15; transport 1;
Butcher	3	20	17: Purchase 18; weight loss 2; labor 4; [hide+head+hoof+viscera= (-12)]
Vendor	6	34	28; Purchase 20; Cooking fuel 2; labor 4; Sale cost 2;