



# SCALING-UP BOVINE MEAT EXPORTS OF PAKISTAN

A REVIEW OF OPPORTUNITIES IN THE  
BOVINE MEAT SECTOR

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# The Pakistan Business Council: An Overview

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The Pakistan Business Council (PBC) is a business policy advocacy platform, established in 2005 by 14 (now 85) of Pakistan's largest private-sector businesses and conglomerates, including multinationals. PBC businesses cover nearly all sectors of the formal economy. It is a professionally-run organization headed by a full-time chief executive officer.

The PBC is a not-for-profit entity, registered under Section 42 of the Companies Ordinance 1984. Though it is not required under the law to do so, the PBC follows to the greatest extent possible, the Code of Corporate Governance as applicable to listed companies.

The PBC is a pan-industry advocacy group. It is not a trade body nor does it advocate for any specific business sector. Rather, its key advocacy thrust is on easing barriers to allow Pakistani businesses to compete in regional and global arenas. The PBC conducts research and holds conferences and seminars to facilitate the flow of relevant information to all stakeholders in order to help create an informed view on the major issues faced by Pakistan.

The PBC works closely with the relevant government departments, ministries, regulators and institutions, as well as other stakeholders including professional bodies, to develop consensus on major issues which impact the conduct of business in and from Pakistan. The PBC has submitted key position papers and recommendations to the government on legislation and other government policies affecting businesses. It also serves on various taskforces and committees of the Government of Pakistan as well as those of the State Bank, SECP and other regulators with the objective to provide policy assistance on new initiatives and reforms.

## The PBC's Founding Objectives

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The major objectives of the PBC as stated in its founding documents are:

- To provide for the formation and exchange of views on any question connected with the conduct of business in and from Pakistan.
- To conduct, organize, set up, administer and manage campaigns, surveys, focus groups, workshops, seminars and field works for carrying out research and raising awareness in regard to matters affecting businesses in Pakistan.
- To acquire, collect, compile, analyze, publish and provide statistics, data analysis and other information relating to businesses of any kind, nature or description and on opportunities for such businesses within and outside Pakistan.
- To promote and facilitate the integration of businesses in Pakistan into the World economy and to encourage in the development and growth of Pakistani multinationals.
- To interact with governments in the economic development of Pakistan and to facilitate, foster and further the economic, social and human resource development of Pakistan.
- The PBC is a Section 42 not-for-profit Company Limited by Guarantee. Its working is overseen by a Board of Directors. More information on the PBC, its members, and its workings, can be found on its website: [www.pbc.org.pk](http://www.pbc.org.pk)

## The PBC's Member Companies





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## List of Acronyms

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<b>ASF</b>	African Swine Flu
<b>ABIEC</b>	Brazilian Beef Processors and Exporters Association
<b>BNDES</b>	Brazilian National Development Bank
<b>BSE</b>	Bovine Spongiform Encephalopathy
<b>CAGR</b>	Compounded Annual Growth Rate
<b>CAP</b>	Controlled Atmosphere Packaging
<b>CPFTA-II</b>	China Pakistan Free Trade Agreement – II
<b>DFZs</b>	Disease Free Zones
<b>ECC</b>	Economic Coordination Committee
<b>EFS</b>	Export Financing Scheme
<b>EuFMD</b>	European Commission for the Control of Foot-and-Mouth Disease
<b>FAO</b>	Food and Agriculture Organization
<b>FMD</b>	Foot and Mouth Disease
<b>GCC</b>	Gulf Cooperation Council
<b>GDP</b>	Gross Domestic Product
<b>GST</b>	General Sales Tax
<b>JV</b>	Joint Venture
<b>L&amp;DD</b>	Livestock & Dairy Development

<b>LDDB</b>	Livestock and Dairy Development Board
<b>MNFSR</b>	Ministry of National Food Security & Research
<b>OIE</b>	World Organization for Animal Health
<b>PARC</b>	Pakistan Agricultural Research Council
<b>PCP-FMD</b>	Progressive Control Pathway for Foot and Mouth Disease
<b>R&amp;D</b>	Research and Development
<b>SPFC</b>	South Punjab Forest Company
<b>SPS</b>	Sanitary and Phyto-Sanitary
<b>TOMCL</b>	The Organic Meat Company Limited
<b>TVP</b>	Texturized Vegetable Protein
<b>UAE</b>	United Arab Emirates
<b>UP</b>	Uttar Pradesh
<b>USA</b>	United States of America



## Foreword

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This study entitled *“Scaling-up Bovine Meat Exports of Pakistan: A Review of Opportunities in the Bovine Meat Sector”* has been completed by The Pakistan Business Council (PBC) as part of its *“Make-in-Pakistan”* initiative.

Developing the bovine meat sector for export is among the easily attainable improvements that Pakistan can seek to achieve for increasing its exports. The stock of bovine animals, the know-how and the comparative advantages in terms of the availability of land and fodder are there to leverage from. What is required is to develop the value-chain by establishing appropriate feedlot farms with vaccinated and traceable animals, upgrading the transportation and cold chain infrastructure and redirecting the focus of exports to frozen bovine meat products destined to the eastern markets in addition to the existing chilled meat segment in the gulf markets.

Investing in the bovine meat sector has the potential to provide windfall benefits to the low income population segment of Pakistan, by promising better earnings and hence an increase in per-capita income of rural livestock farmers. There are an estimated 10 million families in Pakistan with a cattle size of less than 10 animals, who stand to benefit from improvements in the bovine meat value-chain. Furthermore, the consumers in Pakistan will have more options of meat products available to choose from and better prices due to supply chain efficiencies, while as a country, Pakistan will benefit from higher foreign exchange earned by increasing exports of bovine meat products.

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**Ehsan A. Malik**

CEO, The Pakistan Business Council

# 1. Executive Summary

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The report explores the potential of the bovine meat sector for the export market. Pakistan's bovine meat sector presents an opportunity for growth, but is stymied by factors primarily related to the lack of traceability of the cattle stock, the presence of the Foot and Mouth Disease (FMD), the outdated methods and technologies used in aggregating, transporting and slaughtering animals, and the lack of capacity to produce frozen de-boned beef cuts for the international markets.

The size of the global market for trade in bovine meat is USD 52 billion. The global market size has grown four-fold during the last two decades and is geared to continue growing in the future as incomes rise and the propensity to consume beef as a primary source of protein diet increases in developing countries. The global beef market is an opportunity for Pakistan to diversify its exports, given the existing agrarian base of the country, and about 12.5 million families involved in cattle rearing activities.

While there has been a lot of improvement in the productivity of dairy animals, with an improvement in milk production by 15 percent and 46 percent for buffalos and cows respectively over the last three decades, the yield of animals in producing meat is still low. The milk yield of Pakistan's buffalo was ranked third best in the world in 2018 at 1,935 kg/animal per annum. There has been limited focus by livestock farmers to rear animals exclusively for meat production, and typically, spent animals which stop producing sufficient milk are sold for meat.

The yield gap for buffalo meat produced in Pakistan when compared to the top three best meat producing countries, Australia, USA and Brazil is about 35 percent, whereas the top performers produce an average buffalo carcass weight of 297 kg/animal versus 196 kg/animal produced in Pakistan. One of the key drivers of the low yield in Pakistan is the unattractive domestic market for beef. In Pakistan, animals are bought and sold by appearance and not by weight, a disincentive for farmers to invest in fattening animals. Furthermore, there is a price control regime in place to ascertain the sale price of meat sold in the domestic market, which is a constraining factor for profitability of the livestock farmer and hence the lack of investment made on improving the meat yield drawn from the animal.

Keeping in perspective the export opportunity of beef, upgrading the value chain to meet the international demand in addition to the domestic demand for beef is essential to benefit Pakistan's economy. With better earnings from the sector, Pakistan will improve the per-capita income of the rural areas and increase foreign exchange inflow from exports.

Currently, Pakistan exports about USD 250 million worth of bovine meat to eight countries including the six GCC countries, Vietnam and Afghanistan. This constitutes 0.44 percent of the global market. 80 percent of Pakistan's exports in 2019 were of chilled bovine carcasses and a total of 91.6 percent were in the chilled category which included carcasses, bone-in and de-boned bovine meat. Pakistan's exporters have leveraged the demand in the near markets for premium chilled meat, mainly sold in restaurants and retail stores. In contrast, the exports of the three largest meat exporting countries which include Australia, Brazil and India are in the frozen beef category and constitute 65 percent, 86 percent and 90 percent of their meat exports respectively. Frozen beef, which is generally considered as lower quality and cheaper, has a longer shelf life and can be transported by sea to the far markets. This improves the marketability of the product and provides better returns due to cheaper transportation costs by sea, as opposed to by air cargo in the case of chilled meat. However, the appropriate processing capabilities and transportation cold chain is required to process frozen beef which is an extra investment. Furthermore, a competitive exchange rate is essential to ensure the ability to match competitor prices, since the frozen beef market is high volume and price sensitive.

In order to compete in the international market for frozen beef, with China, Japan, USA and South Korea being the top buyers of beef, Pakistan needs to comply with the quality standards and phyto-sanitary standards of the importing countries. The Foot and Mouth Disease (FMD) present in Pakistan limits its access to most global markets, for which the government is undertaking a vaccination programme and making an animal quarantine zone in Cholistan. The intervention is expected to move Pakistan from the World Organization for Animal Health's (OIE) Stage 2 category for countries, (in which FMD is reduced to target areas) to Stage 3. In the third stage the FMD virus is curtailed through an organized national Official Control Programme. Once Pakistan achieves the Stage 3 status, the opportunity to export frozen beef to larger markets such as China will open up.

However, in order to also meet export requirements, traceability of animals is required. This means that Pakistan requires investments in establishing farms where animal herds can be reared exclusively for backgrounding and fattening. In Pakistan, the meat processing companies have started making investments in vertically integrated feedlots which will enable them to assure their customers of traceable animals. However, purchasing land for making feedlots is capital intensive, for which reason the government should consider leasing land to the private sector in the quarantine zone for enabling more players from the private sector to establish feedlot farms and increase the stock of traceable animals.

The federal and provincial governments should redouble efforts to help farmers make their animals traceable, liberalize the price control regime and import suitable breeds of animals and their semen for making high meat yielding bovine breeds available in Pakistan.



# INTRODUCTION



## 2. Introduction

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Pakistan has performed well in increasing its exports from the bovine meat sector; its exports have grown at a faster rate than any peer country with a similar starting point. Prior to 2003, Pakistan had almost negligible exports of bovine meat. Since then, Pakistan has steadily increased its exports to over USD 250 million. The success can be attributed to the private sector in developing export market channels. Since 2010, Pakistan's exports outpaced global growth of exports of bovine meat. Global bovine meat exports increased by 60 percent, whereas Pakistan grew at a significantly higher rate of 250 percent, albeit, exports prior to 2010 were limited. To attain further growth in exports from the bovine meat sector, focused efforts are required by all the stakeholders in the value chain.

Despite its success in increasing its exports, the bovine meat sector is constrained by a number of limiting issues throughout the value chain. In order for Pakistan to develop its bovine meat industry, it has to work on upgrading the value chain, starting at the farm level to processing meat, and finally to managing international sales and marketing effectively.

In the global context, Pakistan's share is small<sup>1</sup> in the global trade of bovine meat, which was valued at USD 52 billion<sup>2</sup> in 2019. Pakistan's bovine meat exports are limited primarily to the six Gulf Cooperation Council (GCC) countries, Vietnam and Afghanistan. Other sizeable bovine meat importing regional countries such as Malaysia, Indonesia, Russia, and China do not import meat from Pakistan due to SPS restrictions and prevalent animal diseases in Pakistan, foremost of which is foot and mouth disease. This limits Pakistan's entry into most of the meat importing countries.

The international halal red meat market was valued over USD 4.3 billion in 2018 of which Pakistan's share was less than 4 percent.<sup>3</sup> A large proportion of bovine meat is exported to Muslim countries by geographically distant non-Muslim countries including Brazil, United States of America, New Zealand, Paraguay, and India. Halal meat production does not give Pakistan a specific edge over other countries. Rather, Halal certifications are a necessity for Pakistani exporters to conform to labelling requirements by other Muslim countries. Since most large meat exporting countries,

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<sup>1</sup> Data obtained from ITC Trade map. Apart from export of bovine meat (chilled / frozen) in the form of carcasses, boneless, and carcasses, Pakistan exported approximately USD 13.8 Million worth of edible offal (including intestines, tongues, livers, etc.) in 2019. Exports of bovine offal has been excluded from this study.

<sup>2</sup> Includes fresh/ chilled bovine meat (HS code: 0201) and frozen bovine meat (HS code: 0202)

<sup>3</sup> The Muslim countries used in calculating Halal Bovine meat market included imports of 18 Muslim Majority countries, six GCC countries, Malaysia, Iran, Iraq, Egypt, Turkey, Algeria, Indonesia, Jordan, Afghanistan, Azerbaijan, Bangladesh, Lebanon. These figures are a close approximate of the total imports by Muslim countries and doesn't factor in halal meat in ethnic sections in the rest of the world.

including non-Muslim countries, process halal beef, it does not provide Pakistan with any unique advantage.

Cattle in Pakistan is not reared to provide beef and is a by-product of dairy farming. This puts Pakistan at a disadvantage against the top bovine meat exporting countries. Without developing backgrounding nurseries and feedlot fattening farms that supply traceable animals to meat processing companies, Pakistan will not be able to effectively compete with other countries. Similar to other countries, Pakistan needs to have progressive plans to develop its capabilities to export. The top priority to accomplish this objective will be to develop disease-free zones, which will create market access to other countries. Pakistan's exports are constrained by a limited supply of traceable bovine animals which are reared for beef and having a few export destinations. By diversifying its export destinations, Pakistan will have the opportunity to access markets with greater purchasing power and market demand, thereby increasing export earnings for Pakistan.

This report discusses the issues and the bottlenecks faced by the bovine meat industry in Pakistan and provides policy recommendations to help scale exports from the sector.



# GLOBAL BOVINE MEAT MARKET

### 3. Global Bovine Meat Market

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Pakistan's share of global bovine meat market, valued at USD 52 billion, is 0.44 percent.<sup>4</sup> Almost all of Pakistan's exports of bovine meat are destined to the GCC countries. The top exporters of bovine meat products are non-Muslim countries, but have Halal accreditations and cater to the demand of Islamic countries as well. The global market place is price competitive but is willing to pay a premium for better quality meat. There are two major market segments, fresh/chilled beef and frozen beef. Higher-end markets prefer consumption of chilled beef which is slightly expensive owing to higher shipping, transportation and wastage costs. Pakistan does not have an edge in countries which require halal meat, since these requirements are already catered to by non-Muslim exporters. It is evident that being a halal meat exporting country does not provide Pakistan a competitive advantage. Rather than putting emphasis on becoming a halal meat supplier, Pakistan should build its capacity to supply better grade and value added processed meat, become price competitive and improve its market access to new destinations.

#### 3.1 Fresh and frozen bovine meat export trends

The total global trade in fresh and frozen bovine meat grew four times to USD 52 billion in 2019 from USD 12.8 billion in 2001. The international trade in bovine meat has grown at a Compounded Annual Growth Rate (CAGR) of 7.9 percent since 2001 and is likely to follow a similar trend going forward. Growth trajectory in meat consumption in international markets is likely to continue in the future. Consumption of meat in developing economies will increase in the future as rising incomes result in an increasing propensity to consume more meat as a source of protein.

The global trade in bovine meat takes place in two broad categories, fresh and frozen bovine meat in almost equal proportion. Figure 1 illustrates the growth in both categories.

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<sup>4</sup> Data obtained from ITC Trade map. Apart from export of bovine meat (chilled / frozen) in the form of carcasses, boneless, and carcasses, Pakistan exported approximately USD 13.8 Million worth of edible offal (including intestines, tongues, livers, etc.).

### Global Trade in Fresh and Frozen Bovine Meat

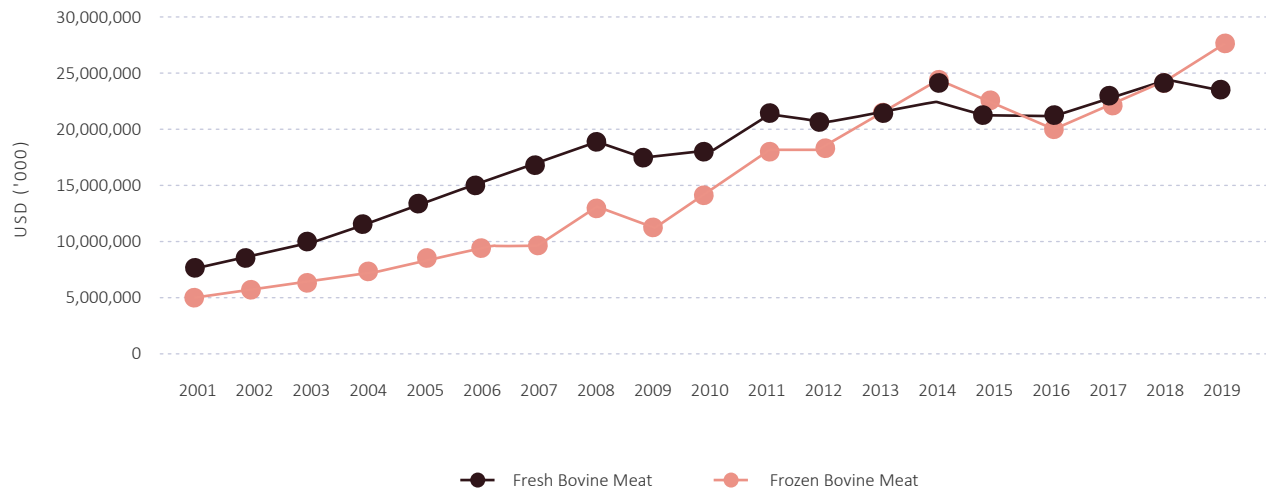


Figure 1 - Global Trade in Fresh and Frozen Bovine Meat

Source: ITC Trade Map

In both the fresh and frozen categories, boneless meat has the largest share among all three product categories<sup>5</sup>. As Table 1 shows, exports of bone-in cuts and carcasses have a significantly smaller proportion of the overall global meat trade. 81 percent of total global exports comprise of boneless bovine meat, both fresh and frozen, while carcasses constitute only 4 percent of the total global trade. Carcasses are lower in demand since they require processing and handling once delivered to international destinations. On the other hand, it benefits exporting countries to process carcasses, de-bone them and produce cuts to fetch a higher price. Some importing countries do not have a developed meat market to handle large scale operations of meat processing and hence they prefer to import de-boned meat and packaged cuts, due to a lack of processing capabilities.

<sup>5</sup> Categories are: Carcasses, Bone-in cuts and Boneless cuts



	Category	Exports in 2019 (USD '000)
Fresh	Fresh boneless bovine meat	16,967,930
	Fresh bovine cuts, with bone in	4,282,003
	Fresh carcasses or half-carcasses	1,930,644
	Total Fresh	23,180,577
Frozen	Frozen boneless bovine meat	24,110,643
	Frozen bovine cuts, with bone in	2,396,261
	Frozen bovine carcasses and half-carcasses	126,731
	Total Frozen	26,633,635
Total Exports		50,744,278

Table 1 – Global Export of Fresh and Frozen Bovine Meat Categories in 2019

Source: ITC Trade Map

Bovine meat is primarily consumed by households, food service industry (restaurants, caterers, hotels, etc.), and meat processing industry, but data on the demand by each category is unavailable. Households and food service industry utilize both frozen and fresh bovine meat, whereas, the food processing industry primarily uses frozen meat. Processed meat industry that prepares burger patties and other value added products is likely to use relatively cheaper meat cuts. There is a greater price sensitivity within the meat processing industry since processed beef products, such as mince beef, burger patties and sausages do not require high grade beef cuts.

### 3.1.1 Geospatial limitations on export of fresh bovine meat

Chilled bovine meat is a temperature sensitive product with a limited shelf life. There is a consumer preference for chilled beef over frozen beef since chilled beef offers better taste and texture. Freezing beef causes water crystals to form in the meat, which ruptures fibre and the muscle cell structure. Thawing frozen beef further deteriorates its quality. Under perfect conditions, chilled bovine meat has a shelf life of up to five weeks if it is stored in temperatures within the range of 0-4 degree centigrade, with relative humidity of 90%.<sup>6</sup> In practice, chilled beef has a shelf life of three

<sup>6</sup> Dr. Munoz G.C., (1991). Manual on meat cold store operation and management, Food and Agriculture Organization (FAO) Production and Health Paper. Rome.

weeks in international markets, depending upon a number of factors, which include product handling, technology, temperature shocks during loading and unloading, cold chain logistics and meat standards of each country.

Transportation of chilled beef as a commodity is logistically challenging and has a high cost associated with it. Chilled bovine meat is transported via air for most destinations, especially for longer distances. Cross border trade can take place through road networks, but it is unfeasible for longer routes. Chilled beef can be transported to shorter destinations via sea, but it has its limitations. For instance, certain countries do not allow import of chilled beef over fourteen days. Limitations of chilled beef's age restrict trade via sea freight for many countries, such as Brazil exporting to the Middle East. Some countries have adopted better storage capabilities that allow longer haulage for chilled beef.

Having no access to target destinations via sea route, chilled beef is transported through air cargo. Transportation of bovine meat through air cargo has disadvantages in international trade. Air freight is significantly more expensive than sea cargo, which increases the landed cost of bovine meat. Due to high air freight charges, the price of chilled bovine meat becomes uncompetitive. Air cargo also has capacity limitations, resulting in a smaller volume of total trade taking place through air than through sea. This limits the overall trade of chilled bovine meat internationally.

### **3.2 Export of other bovine meat products**

Entrails and internal organs, referred to as offal, of bovine animals have a relatively niche global market. The total global trade for these products was USD 4.4 billion in 2019 <sup>7</sup> with Hong Kong and Japan being the biggest importers of these products. The Organic Meat Company Limited (TOMCL) is the only meat processing company in Pakistan which specializes in offal meat products and exports it to international markets. There is room for Pakistan to grow in this segment, however being a niche product, its market size is not as significant.

Processed bovine meat products (primarily sausages) and preserved bovine meat had a global trade of USD 5.1 billion and USD 2.2 billion respectively in 2019 <sup>8</sup>. High value added bovine meat products, such as sausages and burger patties, have limited global market as compared to bovine meat. The domestic market for these products is at a nascent stage and it will take some time for

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<sup>7</sup> International Trade Centre. Trade Map

<sup>8</sup> Ibid

this market segment to develop. Without higher domestic demand, there is limited room for Pakistan to grow in this market segment. International processed beef products require animal traceability which is lacking in Pakistan. Traceability of meat needs to be improved before exporting processed beef products.

### 3.3 Leading bovine meat exporters

The top three countries which export bovine meat, each valued over USD 6.5 billion in 2019, are Australia, United States of America (USA) and Brazil. Following these three countries are India and Argentina, both exporting bovine meat valued over USD 3 billion in 2019. Exports of these five countries combined constitute half of the global trade of bovine meat. The list of top 9 meat exporting countries (exporting over USD 2 billion) is given in Table 2.

Bovine Meat Exporting Countries	Export Value - 2019 (USD ' 000)
Australia	7,629,916
United States of America	6,925,496
Brazil	6,491,582
India	3,125,058
Argentina	3,106,439
Netherlands	2,795,336
New Zealand	2,374,520
Canada	2,183,447
Ireland	2,153,378

Table 2 - Largest Bovine Meat Exporting Countries in 2019

Source: ITC Trade Map

A review of export destinations of the largest exporting countries provides insights into the dynamics of the global bovine meat market. Australia exported over USD 6 billion of bovine meat to four destinations in 2019 making up 80 percent of its export market. These destinations included China, Japan and South Korea which are located roughly 7,000 miles from Australia and the United States of America which is 9,000 miles away. Australia's top export destinations and value of bovine meat exported in 2019 is provided in Table 3 below.

Australia's Top Export Destinations	Exported value in 2019 (USD '000)
China	1,877,170
Japan	1,660,516
United States of America	1,548,230
South Korea	1,024,225

Table 3 - Australia's Top Export Destinations in 2019

Source: ITC Trade Map

About two-thirds of Australia's exports are of frozen bovine meat. Australia has limited exports of meat into European markets because there is a preference of fresh bovine meat in Europe over frozen meat. The distance of 14,000 miles between Australia and importing European countries, such as Germany and France, reduces the feasibility of exports of chilled bovine meat to these destinations.

Brazil's focus on share of frozen bovine meat is even larger than that of Australia's, which amounts to 86 percent of total bovine meat exports from Brazil. Brazil's largest market, was China and Hong Kong whose imports valued at USD 2.7 billion and USD 0.73 billion respectively in 2019. Chilled bovine meat accounted for only 1.5 percent of India's total meat exports. A majority of exports from the top three of the four largest bovine exporters were of frozen bovine meat<sup>9</sup>. Unlike Australia, Brazil and India, USA's exports were evenly distributed between frozen and chilled bovine meat segments. A majority of USA exports of bovine meat were to East Asian countries followed by the South American countries.

There are three factors which determine import preferences. First, distance from the export destination – the farther the import market from exporting country, the more unlikely it will import chilled meat owing to the high shipping cost due to air freight. Second, the purchasing power of importing country – developing countries are more price sensitive and will have a preference to import lower grade frozen bovine meat. Lastly, availability of air space to ship bovine meat cargoes – chilled meat is bulky and requires temperature control to maintain its internal consistency and there is limited space available for meat transportation by air.

<sup>9</sup> International Trade Center. Trade Map.

### 3.3.1 India – Bovine meat exports from a vegetarian country

Religious restrictions in India prohibit the slaughter of cows for Hindus, however, there is no restriction on buffalo meat. India is the fourth largest exporter of bovine meat. Indian bovine meat prices are considered amongst the most competitive in international markets. India exported USD 3 billion worth of frozen bovine meat in 2019. During the last ten years, India's frozen bovine meat export grew by 83 percent. Approximately 90 percent of India's total bovine meat export is frozen beef. The top three export destinations for India's frozen beef are Vietnam, Malaysia and Indonesia<sup>10</sup>. These three destinations are also considered potential markets for Pakistan's bovine meat exports. Therefore, it is important to analyse the dynamics of the Indian bovine meat industry.

India's exports are predicated on its stock of mulching buffaloes. India is the leading exporter of buffalo meat, also referred to as carabeef, and its export potential and competitiveness is determined by several factors. Due to its large domestic consumption of milk and dairy products, India has the world's largest buffalo population. 55 percent of world's buffalo herd, that is approximately 114 million buffaloes, are available in India.<sup>11</sup> About one-fourth of the buffalo herd is accommodated in the state of Uttar Pradesh (UP) where most of the meat processors and exporters are located. UP also accounts for 67 percent of total Indian carabeef exports.

Carabeef is produced from culled water buffaloes used for dairy purposes, or one-year old male buffalo calves and it is a low-priced product. Buffalo meat is not considered a good grade meat for dietary consumption due to its taste and quality. Older age buffaloes provide an even lower grade meat than other bovine animals, since the meat from older animals is not tender. This drives down the price for buffalo meat. Logistics cost for export destinations for India are also low since carabeef is exported to nearby international markets like Vietnam, Malaysia and Indonesia via sea. Exporters produce carabeef in accordance with the halal standards and also meet other quality and sanitary standards required by international markets, which makes India's carabeef competitive in many developing-country markets in Southeast Asia, the Middle East, and North Africa. In addition to its low cost, carabeef's properties, such as good binding structure, make it more suitable for further meat processing, such as beef patties and mince-meat.<sup>12</sup>

<sup>10</sup> International Trade Center. Trade Map.

<sup>11</sup> Food and Agriculture Organization. Statistics 2018.

<sup>12</sup> Landes, Melton and Edwards, (2016). From where the buffalo roam: India's beef exports. United States Department of Agriculture.

State regulations have played an important role in developing the Indian bovine meat industry. Prohibition on culling and exporting cows restricts Indian entry into higher price segment for the bovine meat industry. There is also a restriction on export of any bone-in bovine meat from India. These restrictions have been placed to open access of Indian products to other international markets since bones contain diseases such as Foot and Mouth Disease (FMD).<sup>13</sup> Limited export of chilled meat from India shows that there is greater demand of frozen meat from price sensitive international market segments.

### **3.3.2 Brazil – Capitalizing domestic resources and developing meat conglomerates**

From being a periodic importer of bovine meat before the 1980's, Brazil excelled to become amongst the top 3 exporters of beef in the last decade. After attaining macroeconomic stability in late 1990's, the country was able to capitalize and build upon its natural resources to develop its bovine meat industry. Brazil has the largest cattle size in the world of around 220 million cattle, and slaughters nearly 30 million of these per annum. Some of these cattle are domestically consumed by a large population of 210 million people with a high domestic consumption of 37 Kg/capita per annum. Input feed cost in Brazil is low since the country possesses expansive rangelands which are used for grazing by most farmers. Feedlot cattle farmers have access to cheap source of fodder which is readily available in the form of soybean, given that Brazil is the world's largest exporter of soybean. Brazilian exporters were able to benefit from macroeconomic re-adjustments providing a favourable exchange rate for exports. Depreciation of the Brazilian Real reduced domestic consumption due to the increase in local prices. Most importantly, the government played an active role in providing support to the sector in developing its capabilities.<sup>14</sup>

Most bovine animals in Brazil are reared through pastoral land and animals are grass-fed. Only 10 percent of production is finished on feedlots, which is still sizable and amounts to over 21 million cattle and it is projected to double in five years.<sup>15</sup> By reclaiming the Savannah region in its centre as agricultural land, Brazil sizeably increased arable and pastoral land for its cattle. Approximately one-third of cattle rearing has shifted to the Centre-West of Brazil but it is slowly heading towards the North since land prices are rising with increase of soybean production in the region. Brazil has

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<sup>13</sup> Agricultural & Processed Food Products Export Development Authority. Animal Products. Indian Meat Industry Red Meat Manual. Chapter 6 – Regulations for Safe Meat Export.

<sup>14</sup> Brazil, Market Supplier Snapshot, (2017), Meat and Livestock Australia.

<sup>15</sup> Brazil moves ahead in global meat exports, (2020). Meat and Livestock Australia. Retrieved from: <https://www.mla.com.au/prices-markets/market-news/2020/brazil-surges-ahead-in-global-beef-exports/#>

managed to improve its productivity by increasing its yield per animal. Three zones in Brazil are not recognized as FMD free zones while most of Brazil is considered a FMD free zone with vaccination. These three zones are located in the north of Brazil and its government is working on a programme to make the entire country FMD free.

The government's programmes such as MODERAGE, provide low cost credit to finance land conservation, acquisition of general purpose equipment for handling and storing animals, and equipment needed for animal husbandry.<sup>16</sup> Similarly, the programme MODERINFRA allows producers to build or refurbish silos on their farm with a credit fund size up to USD 43,000 per producer. Cross-breeding programmes have been successful in Brazil. Local varieties of cattle such as Nelore are inseminated with semen of Red Angus, Angus, Simmental, Limousin which result in a much higher yield per animal. The meat industry has 50 percent greater adoption rate compared to dairy farmers which shows that the beef industry is more inclined to increase returns by innovating. The government also works with Brazilian Beef Processors and Exporters Association (ABIEC) to promote the Brazilian beef brand. It is promoted as grass-fed and free range natural beef rather than the grain fed alternatives. ABIEC works with state sponsored bodies to promote the Brazilian beef brand.<sup>17</sup>

Perhaps Brazil's greatest success in its growth of bovine meat production can be associated with the rise of "national champions". The Brazilian government, through the Brazilian National Development Bank (BNDES) has helped meat processing companies by providing them with loans, purchasing debentures and company shares. The three major Brazilian multinational corporations, are JBS, Marfrig, and Brasil Foods (BRF).<sup>18</sup> JBS alone accounts for 40 percent of all slaughter in Brazil each year and has grown to acquire beef producing and processing companies in Argentina, Paraguay, Uruguay, US, Canada, Australia, and Germany. JBS is now larger than the meat processor Tyson in the USA and has also acquired Cargill's Pork division. These Brazilian companies have not only benefited from state sponsorship in increasing exports, but also in being able to effectively integrate the value chain and develop company owned ranches, feedlots and abattoirs which allows them to export consistent quality bovine meat to international markets.

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<sup>16</sup> Financing rate is currently at 6 percent, which is considerably lower compared to commercial rates of 14 percent. Information retrieved from Brazilian Development Bank (BNDES) website: <https://www.bndes.gov.br/wps/portal/site/home/financiamento/produto/moderagro>

<sup>17</sup> Steiger, C., (2006). Modern Beef Production in Brazil and Argentina, American Agricultural

<sup>18</sup> Shefali, S., (2017). The Rise of Big Meat: Brazil's Extractive Industry, Institute for Agriculture and Trade Policy Europe.

### 3.4 Leading bovine meat importers

Imports of bovine meat can be classified into two major categories, fresh and frozen. Imports in each category can be associated with price sensitivity and purchasing power of that country. Richer and health conscious countries prefer to import fresh meat. Table 4 provides a country-wise breakdown on the imports of fresh and frozen meat.

Fresh Meat		Frozen Meat	
Country	Imports in 2019 (USD ' 000)	Country	Imports in 2019 (USD ' 000)
United States of America	3,439,929	China	7,931,483
Japan	2,125,183	United States of America	2,155,310
Germany	1,893,261	Korea, Republic of	2,055,264
Italy	1,877,315	Hong Kong, China	1,636,347
Netherlands	1,571,190	Egypt	1,496,747
France	1,115,884	Japan	1,402,405
United Kingdom	983,746	Russian Federation	806,321
Chile	951,590	Iran, Islamic Republic of	683,126
Korea, Republic of	868,107	Indonesia	653,171
Mexico	773,366	United Arab Emirates	643,486
Rest of the world	7,813,254	Rest of the world	7,282,167
Total Chilled Meat	23,412,825	Total Frozen Meat	26,745,827

Table 4 - Largest Bovine Meat Importing Countries in 2019

Source: ITC Trade Map

China, USA and Japan are the three largest importers of meat in the world. China, being the top importer in the world, imports bovine meat worth USD 7.9 billion.



### 3.4.1 China, the Largest Bovine Meat Market – Neighbouring Pakistan

China has the largest imports of bovine meat in the world, and its import volume is growing at a rapid rate. Pakistan's access to Chinese bovine meat market could open large export opportunities for Pakistan's meat sector. There is an immense increase in Chinese imports since 2010. Between the years 2001 to 2008, Chinese imports increased from USD 6 million to USD 18 million. Between the years 2009 and 2014, imports of bovine meat grew significantly from USD 44 million to USD 1.3 billion. Since then, the imports have continued to grow exponentially to USD 8.2 billion in 2019. Figure 2 illustrates China's exponential increase in imports of bovine meat products.

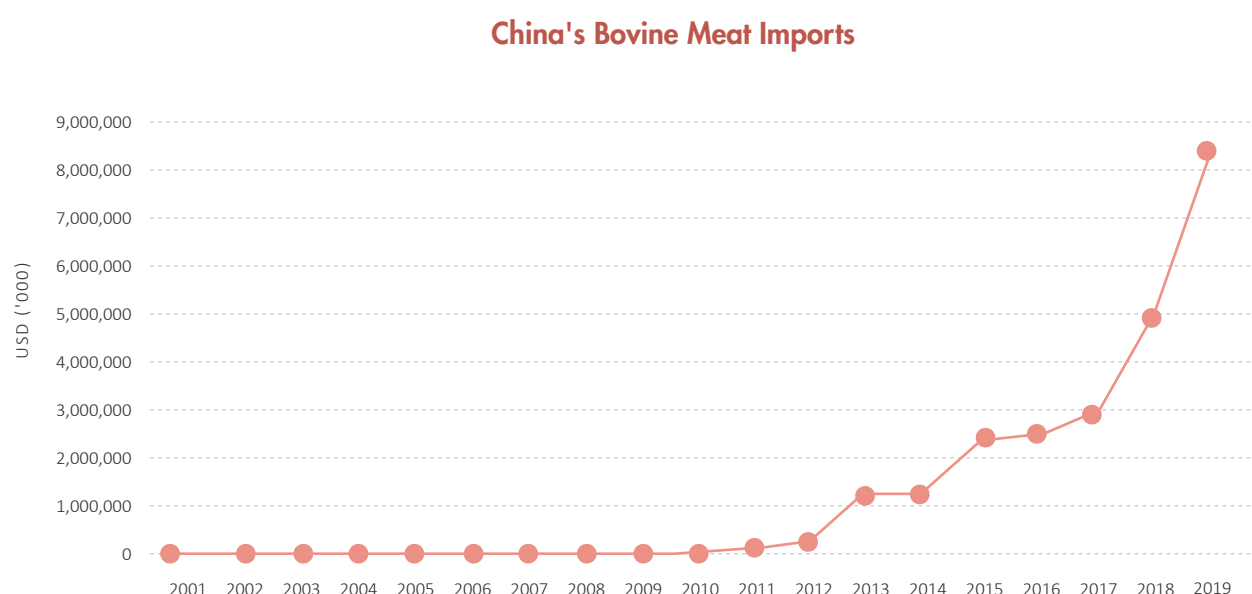


Figure 2 - China's Bovine Meat Imports (2001-2019)

Source: ITC Trade Map

With rising income levels in China, consumption of bovine meat will keep increasing. Rising income levels, higher disposable income, and rapid middle class expansion has driven up consumption of bovine meat in China. Chinese domestic market had a higher proclivity for pork meat. Pork's share in China's meat consumption was estimated at 89 percent in 2017, while sheep meat and beef were at 3 and 8 percent respectively. African Swine Flu (ASF) outbreak in China during 2018 negatively impacted the domestic production of pork by an estimated 30 percent. The drop in production increased domestic pork prices and encouraged substitution towards beef. As income levels continue to increase in China, people will continue to substitute pork with high protein and low fat beef options.<sup>19</sup>

<sup>19</sup> Chen, H., (2020). The beef market in China. Agriculture and Horticulture Development Board. United Kingdom.

Domestic production of beef in China is unable to keep up with the rise in demand. Cattle in China is mostly raised for draught and milk production and less for meat production. Cattle farming in China is still in its nascence. The National Beef and Lamb Development Plan (2013-2020) is formulated by the Ministry of Agriculture and Rural Affairs of China to accelerate beef production, but it has yet to show positive results. The long farming cycle for beef production is unattractive to domestic investors and the sector is highly fragmented.

China has recently given market access for bovine meat imports to numerous countries. In 2014, only 8 countries exported meat to China and in 2019 this increased to 24 countries. Despite the large reported volume of imported bovine meat, the Chinese bovine meat imports may still be under-reported. Market reports suggest that bovine meat is transported across the Chinese borders through grey channels. For instance, India reports export of frozen bovine meat of USD 1 billion to Vietnam, but Vietnam only reports import of USD 328 million of frozen bovine meat. Some accounts suggest that India and Pakistan's bovine meat products are being transported to China via Vietnam.<sup>20</sup>

96 percent of the USD 8.2 billion import of bovine meat in China was in frozen form, mostly boneless cuts. This indicates a higher price sensitivity of the Chinese market. The shin and shank cuts are preferred at the household level. Hotpots, a preference in Chinese culinary traditions use trimmings. Brisket, shoulders, knuckle and chuck parts are used in foodservice industry or for further value added processing by the meat industry.

As subsequent sections will highlight, Pakistan's primary exports in this sector are in the form of fresh bovine carcasses. Pakistan will have to diversify into other meat segments, especially frozen boneless beef if it has to enter the Chinese market.

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<sup>20</sup> Ibid.





# PAKISTAN'S BOVINE MEAT EXPORTS

## 4. Pakistan's Bovine Meat Exports

### 4.1 Pakistan's Bovine Meat Export Trend

Export of chilled bovine carcasses constituted 80 percent of the total bovine meat exports of Pakistan in 2019, in direct contrast with leading global exporters. 91.6 percent of bovine meat exported in 2019 was chilled (including boneless and bone-in cuts). Pakistan's meat exports have increased significantly since 2003, as shown in Figure 3 below. Export of chilled carcasses is the largest export category of Pakistan, which had 67-85 percent share of exports between the years of 2015-2019. Share of chilled bovine meat in the form of cuts with bone-in and boneless meat ranged between 5-11 percent. Frozen bovine meat export share was in the range of 8-31 percent during the same time period. Pakistan has capitalized well on its exports of chilled meat since the start of the century.

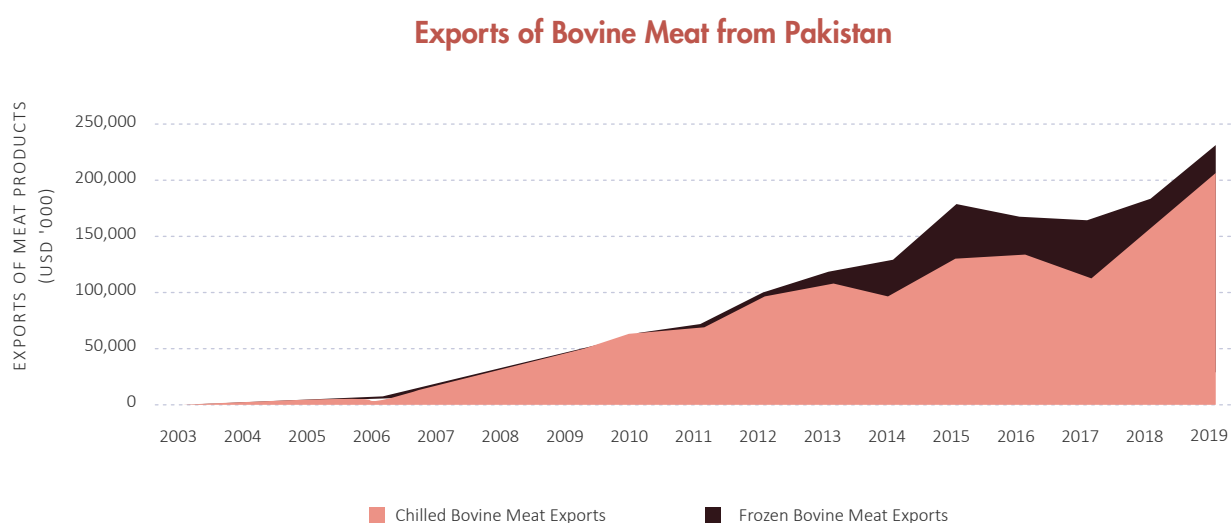


Figure 3 - Exports of Bovine Meat from Pakistan

Source: ITC Trade Map

Pakistan's government did not allow export of meat prior to 1998 and it was first announced in Annual Trade Policy 1998, by the Ministry of Commerce. Export of packed meat was allowed and import of live animal was allowed if 60 percent of the animal's weight upon culling was re-exported. Subsequently, exports of bovine meat have continued to grow at a reasonable pace for the last couple of decades.<sup>21</sup>

<sup>21</sup> Ahmad, M., (2000), Chapter 10: Pakistan; Agriculture, Trade, and Food Security Issues and Options in the WTO Negotiations from the Perspective of Developing Countries, Commodities and Trade Division, FAO.



Export of bovine meat carcasses is a good starting point for Pakistan, but in order for it to become globally competitive, Pakistan needs to build its capacities to export a wider product range. In particular, Pakistan will have to focus on developing capabilities to process boneless cuts, both chilled and frozen. As Figure 3 highlights, Pakistan’s frozen bovine meat exports have not increased, while chilled meat exports are increasing over time. This signifies two important dynamics. Firstly, Pakistan has opportunities to increase its exports through processing, de-boning, and providing cuts. Secondly, Pakistan has growth opportunities within its existing export destinations with investments in frozen meat. Most products are transported via air and have a limited shelf life. The challenges of entering the frozen bovine meat segment are discussed in more detail in later sections of the report.

The domestic product mix for bovine meat needs upgrading, in line with international demand. Pakistan loses out market value and price through limited processing of meat and by not exporting cuts. A higher value per kilogram of meat exported can be achieved by processing meat further. A number of countries prefer importing cuts over carcasses since it requires investments to setup processing facilities to cater for carcasses. With an expanding global market for bovine meat, there is an opportunity for Pakistan to develop its infrastructure and enter larger global markets.

#### 4.1.1 Bovine meat exports to the GCC

Pakistan’s exports of bovine meat are primarily limited to GCC countries, with limited volumes exported to regional countries like Vietnam, Azerbaijan and Afghanistan. Within the GCC market, Pakistan has a significant market share of the chilled bovine meat category. Pakistan had 26 percent share of total imports of chilled bovine meat by the GCC. Table 5 summarizes the segment-wise breakup of Pakistan’s exports to the GCC.

Category	Proportion of chilled imports	Pakistan's Share
Carcasses	23%	56%
Cuts (Bone-in)	20%	63%
Boneless	57%	1%
Total	100%	26%

Table 5 - GCC Countries Import of Chilled Bovine Meat and Pakistan’s Share in 2018

Source: ITC Trade Map

Over half the imports of GCC countries in the category of bovine carcasses and bone-in cuts was catered for by Pakistan. Both these categories together constituted 43 percent of total imports of chilled bovine meat by the GCC countries. Pakistan had almost no share in the boneless chilled beef category of the GCC countries.

Table 6 shows the country-wise breakdown from each category. United Arab Emirates (UAE) and Kuwait have the largest imports within the GCC countries. It is interesting to note that the UAE exports frozen bovine meat valuing USD 122 million to Iran, a country which Pakistan finds difficult to export to due to international sanctions.

Product	Carcasses			Cuts (with bone in)			Boneless		
	Import from Pakistan (USD 000)	GCC Countries' Import (USD 000)	Pakistan's Market Share	Import from Pakistan (USD 000)	GCC Countries' Import (USD 000)	Pakistan's Market Share	Import from Pakistan (USD 000)	GCC Countries' Import (USD 000)	Pakistan's Market Share
GCC Countries	87,226	154,394	56%	83,879	133,645	63%	4,131	384,983	1.1%
United Arab Emirates	13,124	22,339	59%	66,281	101,354	65%	3,371	186,887	1.8%
Kuwait	42,139	77,518	54%	-	1,983	0%	-	33,208	0.0%
Saudi Arabia	12,331	15,152	81%	17,134	23,386	73%	675	106,869	0.6%
Qatar	2,624	11,793	22%	443	4,011	11%	11	34,923	0.0%
Bahrain	9,710	18,811	52%	21	1,581	1%	-	12,273	0.0%
Oman	7,298	8,781	83%	-	1,330	0%	74	10,823	0.7%

Table 6 – GCC Countries Imports of Bovine Meat from Pakistan in 2018

Source: ITC Trade Map

Pakistan has a quarter of the total market for bovine chilled meat in GCC and almost negligible share of the frozen meat category. In 2018, GCC countries imported USD 673 million of chilled bovine meat and USD 786 million of frozen meat. It is important to highlight that Pakistan was unable to cater for the market segments which require greater processing capabilities. In order for Pakistan to increase its exports, not only globally but also to capture greater market share in the GCC region, it will need to increase its capability to produce boneless and frozen bovine meat products.

Pakistan's market share of exports to the GCC countries in all three frozen meat sub-categories is

minimal. Within the sub-category of frozen bovine meat exported, Pakistan had only 2 percent share in market of frozen carcasses and cuts and 0.03 percent share of the boneless sub-category.

Pakistan's market share in total meat imports by the GCC countries reached an all-time high of 15 percent in 2016, after which the market share has gradually reduced to 12 percent in 2018. Pakistan's declining share in total GCC bovine meat imports can be attributed to low share in the frozen bovine meat market. Frozen bovine meat constituted 54 percent of total GCC bovine meat imports. There is greater growth in the frozen bovine meat category in the GCC market, which reduces Pakistan's overall share in the market despite growth in the chilled meat category. Figure 4 illustrates growth of Pakistan's share in total GCC countries' import of bovine meat.

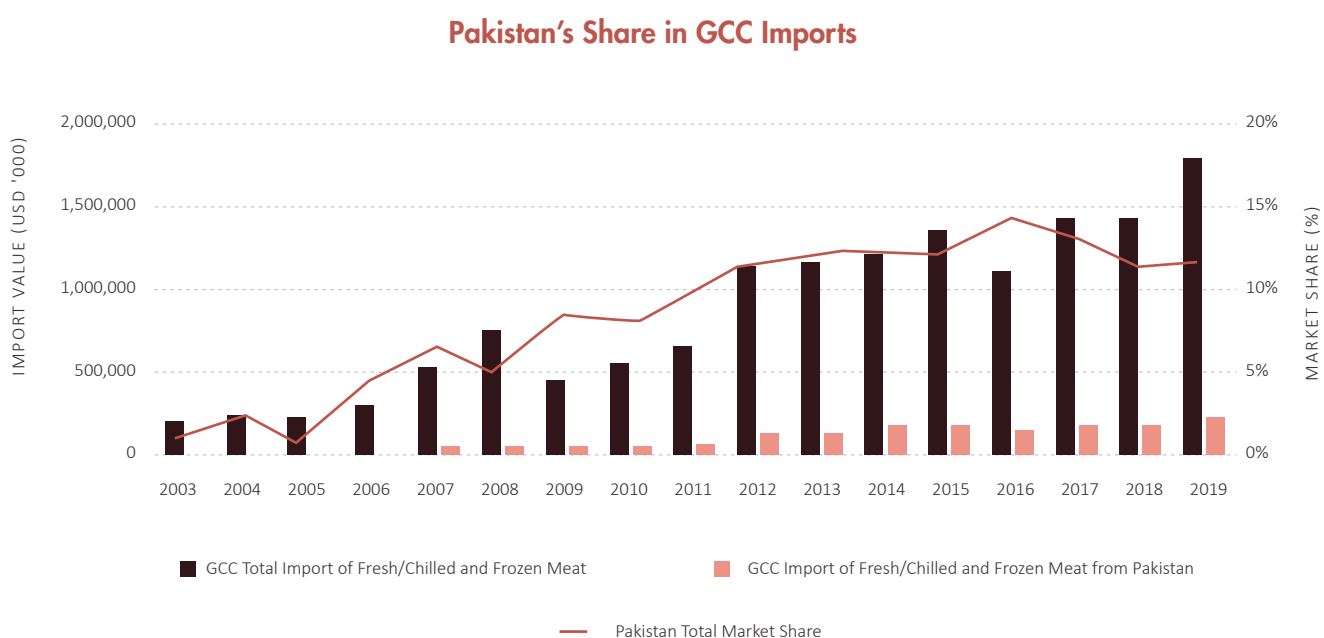


Figure 4 - Growth of Pakistan's Share in GCC Imports

Source: ITC Trade Map

There is a significantly higher global demand for boneless chilled bovine meat and frozen bovine meat, and Pakistan should develop its capacity to supply these products in order to attain a greater bovine meat market share. Pakistan will find it harder to obtain a greater share in the chilled bovine meat segment than what it already has in the GCC countries. Pakistan will need to expand its product range to offer boneless meat and frozen products. The exporters in Pakistan only tend to undercut prices from each other since they have to sell to limited wholesale buyers in the GCC countries. Only a couple of domestic companies have access to large retail chains in the UAE such as Carrefour and Lulu. Since Pakistan's meat does not have high value brand association, it cannot be sold as a premium product in the GCC market.



# CONSTRAINTS IN INCREASING BOVINE MEAT EXPORTS



## 5. Constraints in Increasing Bovine Meat Exports

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The growth in export of bovine meat from Pakistan has been rapid over the last decade. But there are many technical barriers which limit Pakistan's further growth in the sector. To better understand limitations which Pakistan's bovine meat exporters will likely experience in the next few years, it is important to review the sector holistically. This section will highlight key constraints and bottlenecks which limit the growth of exports in Pakistan's bovine meat sector.

In order to achieve a fundamental improvement in exports of bovine meat from Pakistan, structural improvements are required at all stages of the value chain to be globally competitive. The current value chain can be classified into three discrete categories, that is, domestic production, meat processing, and export market. Without addressing upstream issues, downstream investments will not help realize Pakistan's export potential. Systematic improvements which emulate international best practices will be required for Pakistan to register itself as a global competitor.

Pakistan has a limited supply of livestock, reared for the purpose of beef production. A fundamental challenge to Pakistan's meat exports is the availability of cattle reared in traceable farms. The current breed of cattle is not well suited to cater for international demand and is not optimized for high yields. Cattle used in abattoirs are raised by informal and undocumented methods across rural Punjab and Sindh. A majority of bovine animals which are consumed as meat in Pakistan are not reared specifically to produce beef. Livestock farmers have a preference for rearing heifers to male calves. Heifers are reared for milk while bull calves are culled for meat at a young age. Investment in feedlot fattening farms to rear bovine animals is required which will produce better suited animals for meat production.

There are thirty-four government approved private sector slaughter houses, many of which export bovine meat to international markets.<sup>22</sup> Anecdotal evidence suggests that these abattoirs are functioning at one-quarter of their peak capacity. Apart from a few of these slaughter houses, there is a lack of proficiency in processing bovine meat for de-boning and freezing for international markets. The meat processors are limited to capturing greater share within existing beef segments in the GCC markets and are unable to compete in the frozen market; exports of chilled carcasses and bone-in cuts remain the biggest export market. Exports of frozen meat require additional processing facilities on the existing abattoirs, but more significantly Pakistan is unable to compete

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<sup>22</sup>List of slaughterhouses. Animal Quarantine Department, Ministry of National Food Security and Research. Government of Pakistan. Retrieved from: <http://www.aqd.gov.pk/list-of-registered-slaughter-houses/> on 16th February, 2021

on price as compared to India. Exports of chilled beef products are shipped via air which is an expensive mode of transportation and there are capacity constraints of cargo as well. Investments in developing high technology abattoirs can only be successful if they are integrated in the value chain to ensure a supply of high quality, traceable and documented bovine animals.

Another limitation facing Pakistan's exports is access to international markets. FMD is endemic in Pakistan which has constrained its export markets to a few countries. Only eight countries import bovine meat from Pakistan on a regular basis. Without greater access to international markets, exporting companies do not find it feasible to invest in improving meat processing capabilities. Therefore, the exporters prefer to capitalize on opportunities in existing export destinations than to invest for access into new markets.

Access to international markets is also limited due to weak implementation of quality standards. Pakistan needs to fulfil quality requirements of the international markets in order to export meat. Sanitary and Phyto-Sanitary (SPS) standards, quarantine arrangements for live animals and absence of disease free certifications also act as barriers to entry. Apart from the SPS measures, Pakistan's exporters do not fulfil traceability requirements for higher end bovine meat markets. Bovine animals are procured from undocumented sources in rural areas and aggregated in urban areas through undocumented intermediaries. With the entire value chain being undocumented, ensuring traceability at the moment is very challenging.

The subsequent chapters in this report will provide greater detail on each of the bottleneck identified above.



# BOVINE MEAT SUPPLY IN PAKISTAN

## 6. Bovine Meat Supply in Pakistan

Pakistan has a sizable livestock, one of the largest in the world. Livestock contributes to 11.7 percent share of Pakistan's GDP<sup>23</sup>, involves more than 12 million families<sup>24</sup>, and generates 35-40 percent of their income. There are approximately 91 million bovine and over 116 million caprine ruminants in Pakistan<sup>25</sup>. The number of bovine ruminants are shown in Table 7.

Livestock population (Million)				
Species	2016-17	2017-18	2018-19	2019-20
Cattle	44.4	46.1	47.8	49.6
Buffalo	37.7	38.8	40.0	41.2
Total Bovine Ruminants	82.1	84.9	87.8	90.8

Table 7 – Livestock Population

Source: Economic Survey of Pakistan

Despite the size of livestock in Pakistan, it is marred with issues of low grade marbling and yield. The yield gap between the top three global bovine meat exporting countries and Pakistan is 102 kilograms per animal. Average weight of cattle in USA is 363 kg/animal while it's 196 kg/animal in Pakistan. These figures probably do not factor in the higher proportion of young male calves slaughtered for beef before reaching maturity. Similarly, Australia and Brazil have a carcass yield above 250 kg/animal as shown in Table 8. Smaller animal size makes it difficult to obtain better cuts of beef which have a higher premium. Retailers, households and food service sector desire specific cuts based on their requirements which is difficult to cater to with a smaller carcass. Better and more usable offal, hides, and other by-products can be obtained from a larger bovine animal. In general, a larger carcass is more desirable. Low carcass yields of animals can be attributed to local breeds of livestock in Pakistan. Traditional practices of livestock rearing and husbandry are sub-optimal for increasing animal size through protein based intake.

<sup>23</sup> Ministry of Finance. Economic Survey of Pakistan 2019-20

<sup>24</sup> Estimated based on the following assumptions: Total population 220 million, average household size 6.68, 38% of the total households rear livestock (as in 2006)

<sup>25</sup> Ministry of Finance. Economic Survey of Pakistan 2019-20



Yield /Carcass Weight (kg/animal)						
	Australia	United States of America	Brazil	Average of Top Three Bovine Meat Exporters	Pakistan	Gap
Cattle	280	363	250	298	196	102

Table 8 – Yield Gap Between Top Three Bovine Meat Exporting Countries and Pakistan

Source: Food and Agriculture Organization Statistics 2018

## 6.1 The cattle stock and ownership

The fundamental challenge in increasing Pakistan's exports of bovine meat is to organize its domestic infrastructure. Pakistan has the seventh largest cattle inventory in the world with 91 million estimated bovine animals.<sup>26</sup> In terms of potential meat recovery from its cattle inventory, Pakistan's output is less since the yield per animal is low and males are slaughtered at a young age. Milk production from bovine animals provides better return on investment to small scale farmers since it provides them with a daily source of income. The dairy cattle get preferential treatment by the farmer. Advances in cattle rearing in Pakistan for dairy production have improved milk production by 15 percent and 46 percent for buffalos and cows respectively over the last three decades. Table 9 shows that Pakistan's milk yields from buffaloes are amongst the best in the world. Advances in bovine meat production are also necessary in order to improve meat yields from bovine animals in Pakistan. Creating a scalable export market for bovine meat will require development of structured economic model which generates interest and investments into rearing animals suited to meat production.

	1990		2018		Growth in Milk Yield
	Milk Yield (kg/animal)	Pakistan's Global Rank	Milk Yield (kg/animal)	Pakistan's Global Rank	
Cow	842	96	1,230	127	46%
Buffalo	1,682	2	1,935	3	15%

Table 9 – Pakistan's Milk Yield and Global Rank

Source: Food and Agriculture Statistics Database

<sup>26</sup> Food and Agriculture Organization, Statistical Database

Cattle in Pakistan is reared by households at a small scale, primarily to produce milk. Of the estimated 12.5 million households<sup>27</sup>, 79 percent households had 10 or less cows and buffaloes. Only 7 percent had a holding size of over fifty cows and buffaloes. By an estimate, 80 percent of bovine animals are located in rural areas and 15 percent in peri-urban regions.<sup>28</sup>

### 6.1.1 The plight of male calves

A limited number of bulls are reared for meat production in Pakistan and a disproportionate emphasis is placed on rearing female calves due to their economic utility in dairy production. Male calves are weaned off the mother's milk upon birth; instead the milk is used to generate income. The calves do not receive colostrum, which is nutrient-rich mother's milk upon birth, lowering the likelihood of the calves' survival. Resultantly, male calves develop illnesses and remain weak. Weaning male calves away from the mother's milk is also a global practice. As a substitute, male calves are provided bottled milk in other regions, which generally has less volume of milk than they would have received in natural conditions. The bottled substitute milk provides adequate nutrition for calves to grow and mature.<sup>29</sup> Although, maternal deprivation causes stress and high cortisol levels in young animals, which subsequently inhibits future growth of bulls. The situation in Pakistan is more precarious since the estimated mortality rate of bull calves is 30 percent annually, and about 5 million male calves are slaughtered before the age of one month.<sup>30</sup>

The high percentage of male calves which are slaughtered before reaching maturity highlights the lost economic potential of bovine meat production in Pakistan. This also delineates supply limitations faced by meat processors. Interestingly, due to the high supply of male calves domestically, the price of veal is similar to price of beef in Pakistan. Veal is considered a delicacy around the world and has a higher price associated with it. In order to uplift Pakistan's standards in bovine animals, there is a need to adopt cattle farming practices predicated on raising bull calves. Nurturing young calves into bulls provides an opportunity to improve Pakistan's total output in bovine meat production. Box 1 details an initiative taken by the Government of Pakistan as a step to overcome this problem.

<sup>27</sup> Estimated based on the following assumptions: Total population 220 million, average household size 6.68, 38% of the total households rear livestock (as in 2006)

<sup>28</sup> Livestock census 2006

<sup>29</sup> Wagner, K. et. Al., (2015). Early separation of cow and calf has long-term effects on social behavior. Applied animal behavior science. Vienna.

<sup>30</sup> Livestock and Dairy Development Board. Prime Minister Initiative for Save the Calf.

### **Box 1 – Prime Minister’s Initiative for Save the Calf** <sup>31</sup>

Livestock farmers in Pakistan do not invest in male calves which results in either early slaughter or death due to malnutrition and diseases. This leads to a 30 percent mortality rate of male calves, aged three months or below, in Pakistan. As a result of this practice, Pakistan loses opportunity to produce higher quality beef, and livestock farmers forego an opportunity to generate income from the calf rearing business.

Keeping in consideration the lost opportunity as a result of the aforementioned practice, “Save the calf” a PKR 3.4 billion initiative was launched by the Government of Pakistan. Ministry of National Food Security & Research (MNFSR) through the Livestock and Dairy Development Board (LDDDB) which is executing this programme in coordination with all provincial and regional livestock departments of the country.

With an underlying purpose to increase production of high-quality beef in Pakistan, the project envisages to save 380,000 male calves aged three months or below during four years. This is being achieved by disbursing PKR 4,000 to the livestock farmers every three months to cover rearing and fattening expenditure of the calves. Under this project, livestock farmers also receive capacity building training on calf rearing and husbandry practices to prepare calves for backgrounding and feedlot fattening. The project aims to reduce male calf mortality to 5% and produce additional 27.3 million kilograms of beef by the end of the programme’s duration.

## **6.2 Improving livestock varieties**

Yield gap between top three bovine meat exporters and Pakistan is 102 kilograms per animal. This can be attributed to low-yielding cattle breeds in Pakistan. Traditional practices of rearing livestock further compounds this problem since animals are not given adequate nutrition in the rural areas. The absence of backgrounding and feedlot farming infrastructure in Pakistan results in sub-optimal varieties of animals which have not been fed on low nutrition fodder.

<sup>31</sup> Livestock and Dairy Development Board. Prime Minister Initiative for Save the Calf.

Introducing better varieties of animals, reared specifically for beef and not as by-product of dairy, is important for Pakistan to increase its yield for bovine meat. For instance, the breed Belgian Blue is very muscular due to a mutation which restricts generation of a protein that regulates muscle growth, hence causing the breed to have “double muscling”. Cross-breeding through artificial insemination with other high beef yielding varieties of cattle such as Angus should also be considered. Inseminating local livestock with high quality breeds to obtain calves is a cheaper alternative to importing live animals. The Government of Pakistan, through the Livestock and Dairy Development Board (LDDDB) and provincial livestock departments has made efforts to improve domestic varieties through artificial insemination programmes. This has included internationally recognized animal varieties such as Arbadeen Angus and Simmental. Most of these programmes to improve domestic varieties have not been successful since there is not enough private sector involvement. Without encouraging cattle rearing for beef production, such programmes will not be successful. Special consideration should be given to selecting optimal varieties of cattle in Pakistan which have low feed to meat conversion ratio, and adapt well to climatic zones in Pakistan. Box 2 below shows the local varieties of bovine breeds in Pakistan.

Local varieties are suited for dairy production and induction of beef varieties has not been given attention. The feasibility of rearing meat producing varieties has yet to be established in the domestic market, with farmers adopting the business model. A systemic shift will occur when the incentive structure aligns in favour of beef production. Currently, dairy farming provides better returns over beef farming, however, meat production will also produce good returns. Cattle farmers in Brazil are inclined towards cross-breeding cattle for meat due to return on investments. The adoption rate for cross-breeding beef based cattle is 50 percent higher in Brazil than that of dairy animals since every additional kilogram of weight put on by the animal provides the farmer additional return. This is not the case in Pakistan, where sale and purchase of animal is not based on weight.



## 6.3 Improving aggregation by developing farms

Improved aggregation and dedicated farms to raise bovine animals to produce beef will be necessary if Pakistan is to volumetrically increase its exports from the sector. As mentioned in the section above, the bovine animal population is fragmented across different parts of rural Pakistan. A majority of households have small cattle holdings - 85 percent of total bovine animal stock is owned by households with ten or less animals. Young male calves or old cows and buffaloes are sold in open livestock markets (mandis) and are transported to urban centers. Bovine meat exporting processors and local butchers procure animals from various mandis (wholesale markets). Much of this process is facilitated by arthis, who act as middlemen. They finance the purchase of animals from rural areas and transport them to the designated mandis. They provide immediate financing and liquidity to rural households at the time of purchase from the farmer. The sale prices offered to rural households are often less than prevailing market prices if the animals are sold urgently.

An inherent flaw in the arthi based bovine animal trading system is that it is undocumented and there is no traceability of animals, i.e., there are no records on the sale and purchase of animals. More importantly, there is no history of animals regarding their birth, vaccination and genetic history. The lack of traceability makes Pakistan's bovine meat non-complaint in high-end markets which require animal traceability. In addition to this, animals are not sold in markets based on their weight, but rather a presumption of how presentable an animal looks and other physical features. While the arthi based system is outdated, and until a better animal collection and marketing mechanisms develops, it will continue to prevail.<sup>32</sup>

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<sup>32</sup> Meat Study Report., (2016). Competition Policy and Research Department, Competition Commission of Pakistan.

## Box 2 – Local Breeds of Bovine Animals

Bovine animals in Pakistan are reared for dairy purposes, therefore, there are no breeds specific to beef production. There are various breeds which serve a dual purpose. Even though, dual purpose breeds are raised for milk production, they can be a good source of beef. The characteristics of main dual purpose cattle/buffalo breeds are as follows:

**Sahiwal breed**, originates from Sahiwal district of Punjab is also found in Okara, Pakpattan, Multan, and Faisalabad. This breed is medium-sized and has a fleshy body. The female animal has a reddish dun colour, while the male animal has a darker color around the orbit, neck, and hindquarters. The adult male weighs around 400 to 500 kilograms, while the female weighs 300 to 350 kilograms. The males having a body weight of more than 1,000 kilograms have also been documented. The average lactation length of the Sahiwal breed is 235 days and milk yield is 1,500 to 2,200 liters per lactation period<sup>33</sup>. The Sahiwal breed is used both as a pure breed, for upgrading of unimproved cattle and for crossbreeding with European breeds.<sup>34</sup>

**Bhagnari breed**, originates from Bhag in Baluchistan, has a well-proportioned body which is grey and white in complexion. The adult male animal weighs 475 kilograms, while the female animal weighs 397 kilograms on average. With an average lactation period of 262 days, this breed produces approximately 907 liters per lactation period<sup>35</sup>. This breed has high tick resistance and can withstand hot weather.<sup>36</sup>

**Cholistani breed** originates from Cholistan and adjoining areas of Bahawalnagar, Bahawalpur, and Rahimyar Khan districts. The Cholistani breed is a large-sized flabby animal with small horns. The adult male animal weighs 450 to 500 kilograms, while the female animal weighs 350 to 400 kilograms. With an average lactation period of 285 days, its milk yield ranges from 1,200 to 1,800 liters per lactation period.<sup>37</sup>

<sup>33</sup> Breeds, Livestock and Dairy Development Board.

<sup>34</sup> Small-scale Dairy Farming Manual, Volume 2, Husbandry Unit 2, Breeds of Dairy Cattle and Buffalo, FAO

<sup>35</sup> Zebu Cattle of India and Pakistan, Agricultural Studies, FAO

<sup>36</sup> Ali et al., (2018), Exclusive Characteristics of Bhag Nari Cattle among the Other Indigenous Cattle Breeds of Pakistan. Pakistan Journal of Zoology, vol 50(5), pp 1979-1982.

<sup>37</sup> Breeds, Livestock and Dairy Development Board

**Tharparkar breed**, originates from the Tharparkar district in Sindh, and is a medium-sized breed with a long tapering face. The adult male animal weighs around 470 kilograms and female animal weighs 285 kilograms on average. With an average lactation period of 277 days, its milk yield is 1,584 liters per lactation period<sup>38</sup>. The Tharparkar breed is hardy and well adapted to the extreme climatic conditions and scarce food availability of the Tharparkar district.

**Nilli Ravi breed** can be found in Lahore, Sheikhupura, Faisalabad, Okara, Sahiwal, Pakpattan, Vehari, Multan and parts of Bahawalpur and Bahawalnagar districts of Punjab. However, because of its well-recognized dairy qualities, this breed is now found all over the country. Nilli and Ravi were recognized as separate breeds until 1960's when merging of the two breeds was accepted in the form of Nilli-Ravi breed. These animals have a bulky body and are black in color, wall eyed, with white head markings. The adult male animal weighs around 600 kilograms and the female animal weighs 450 kilograms on average. With a lactation period of 250 to 300 days, the Nilli Ravi breed produces 1,800 to 2,000 liters per lactation period.<sup>39</sup>

## 6.4 Developing Backgrounding and Feedlot Fattening Farms

Pakistan needs to adopt feedlot farming practices in order to resolve the lack of aggregation. Prior to animals being sold to feedlot farms for finishing operations, backgrounding animals is important for:

- Improving genetics
- Weaning calves to pasture at a suitable age for feedlot
- Completing vaccination activities to ensure there are no diseases
- Completing deworming activities
- Enabling socialization with other calves and habituation with the feedlot environment
- Selecting unsuitable and low-quality calves from the herd

<sup>38</sup> Afzal, M. and Naqwi, A.N., (2004), Livestock Resources of Pakistan: Present Status and Future Trends, Quarterly Science Vision, Vol 9, No.1-2, Animal Sciences Division, Pakistan Agricultural Research Council, Islamabad

<sup>39</sup> Breeds, Livestock and Dairy Development Board

There are only a limited number of feedlot fattening farms in Pakistan, and anecdotal evidence suggests that they procure animals from mandis which makes their sourcing unreliable. Backgrounding is an important precursor to feedlot farming to provide reliable ruminants for sourcing meat as an input for processing. During backgrounding, an animal develops its muscle and frame, with little fattening. It is fed forages such as hay and silage in addition to pasture feeding. Animals are subsequently sold to feedlot farms which have the capability of doubling the weight of an animal in an average of three months.

For backgrounding, two kinds of livestock can be utilized; domestically reared animals and imported live animals. In August 2020, the Economic Coordination Committee (ECC) of the Cabinet approved import of live animals, meat and meat products, which was previously banned due to outbreak of Bovine Spongiform Encephalopathy (BSE)<sup>40</sup> disease in 2001. Importing live animals to develop a herd is costly and generally not recommended. Instead, insemination of local livestock with semen of high quality bulls is a common and effective practice.

Site selection is an important criterion for developing feedlots. Feedlots should be ideally located near grain or fodder growing areas so that there is access to inputs for the cattle and proximity to abattoirs or mandis should also be factored in. Feedlots do not require a lot of land if silage is readily available. Feedlots are designed to cater for 50 animals in an open pen. An animal requires up to 150 square feet in a pen. A 500 head feedlot requires around 5 acres of land including loading chutes and silage storage. Multiple pens can be deployed adjacently or in rows depending on the size of the land and its terrain. The most critical element for feedlots is having access to constant supply of clean water for optimal weight gain of an animal. At least 75 kilograms of water should be available for each animal per day. Depending on the land topography, pens should be spaced out to provide cattle access to feeding alleys and maintain good drainage within the pens. Drainage is one of the most important aspect in site selection for effective sanitation. A wide range of materials can be used to construct feedlots, the cheapest being a pipe structure with thatches while a steel structure being the more expensive option.<sup>41</sup>

Although feedlots help enhance the animals' weight, the sale of animals is based on their visual appearance and their prices are determined based on estimations, both at the farm level and at the mandis. By removing any quantifiable metric of sale and purchase of animals, the incentive to improve their upkeep and fattening them is lost. Exporters also procure animals based on visual

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<sup>40</sup> BSE infected countries were the United Kingdom, Ireland, Belgium, Denmark, France, Germany, Italy, Luxembourg, Holland, Spain, Canada, Falkland.

<sup>41</sup> Feedlot Management and Operation Handbook, US-Pakistan Partnership for Agriculture Market Development, USAID

inspection rather than the weight of the animal. There are a limited number of feedlots operating in Pakistan and the expectation is to raise the animal for a ninety-day period before selling it. Feedlot operators try to ensure that the animals are sold on the ninetieth day since any incremental weight the animal puts on is generally not monetized. Additional food that the animal consumes or weight it gains as a result, does not increase the feedlot operators' returns.

The practice of sale by weight needs to be incorporated in the bovine meat industry. The development of contracts for purchase of animals and the documentation of animals will create a need for weight based procurement. The formation of feedlot farms will resolve two issues faced by the sector. Firstly, it will reduce the number of animals that are culled prior to reaching their prime age. Secondly, it will improve the quality of meat available for export and domestic market since there will be less reliance on spent animals from the dairy sector.

The logical progression for Pakistan will be to develop large scale backgrounding and feedlot farms by incentivizing the private sector to invest in the upstream value chain.

## **6.5 Large Scale Cattle Farms and Feedlots**

Large scale investments in corporate cattle feedlots and farms for bovine animals will provide a solution to various issues faced by Pakistan in accessing and competing in the international market. A corporate structure has a divested ownership which requires proper documentation. This in turn will ensure traceability of bovine animals and open several international markets which are otherwise inaccessible to Pakistan. Since, the meat processors and exporters in Pakistan procure animals from the mandis, traceability of animals cannot be ensured. Given that backgrounding nurseries are inexistent, the corporate farms and feedlots will have to consider establishing backgrounding nurseries as well. Large landholder farmers can also develop backgrounding facilities. A corporate structure makes it inherently easier to lower personal risks and liabilities and to generate financing from institutional lenders or capital markets.

The contracts between corporate farms and meat processors will ensure a pre-determined price, weight of the animal, quantity and quality of animals for procurement. This will reduce information asymmetry and assist meat processors to forecast supply of animals and their prices in a reasonable manner. Corporate farms will have meat processing and exporting companies as assured buyers and therefore, they will have the incentive to invest in high-yielding animal

varieties, vaccination and animal feed.

There has been limited investments in corporate cattle rearing in Pakistan. High capital cost of setting up a corporate cattle farm and limited downstream integration with meat processors and exporters prohibit investments in the sector. A lack of product diversification in bovine meat export to the GCC region, which is a price sensitive commodity market, discourages investments in corporate cattle farms. The majority of cattle are reared by households which have less than ten cows and bulls. Therefore, aggregation can only take place by investments in large-scale cattle farms and feedlots.

Land acquisition is one of the main cost of establishing feedlot fattening farms. The feedlots require land allocated for cattle holding pens, feed storage, ponds and manure storage. International best practice suggests that 5,000 bovine animals will require 55.5 acres of land of which 18.5 acres will be pen area.<sup>42</sup> One of the largest feedlot farms in the United States of America is built on an area of 500 acres which holds 50,000 bovine animals.<sup>43</sup> Studies conducted in Pakistan also mention that 5 acres of land is required to hold 500 bovine animals. Additional land might be required for growing animal feed if it is unavailable in the local market.<sup>44</sup>

Rearing animals on large scale corporate farms and feedlots is cost effective and will provide price advantage in the international market. At present, a kilogram of beef exported by Pakistan fetches a lower price than the beef exported by other competing countries such as Brazil and Australia. Large scale cattle rearing will result in economies of scale which will reduce the input cost, particularly of fodder and silage. Feedlot farms established on corporate farming contracts will produce a greater quantity of meat due to improved yield per animal and create the required backward and forward integration between production, processing and marketing.

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<sup>42</sup> Watts et. Al, (2016), Beef cattle feedlots: Design and Construction, Meat and Livestock Australia.

<sup>43</sup> Claffy, N. (2019), AgriLand. Beef Focus: Inside the gates of a 50,000 head feedlot in Texas.

<sup>44</sup> Feedlot Management and Operation Handbook. USAID and UVAS.

### Box 3 – High-Yielding Cattle Breeds

Beef cattle are classified into two biological types; *Bos taurus* (non-humped) and *Bos indicus* (humped, also called Zebu). Globally known high-yielding cattle breeds fall into either of the two categories and can be characterized according to the following major functional traits, that are considered significant to determine the quality of beef produced:

Mature Body Size	Age At Maturity	Environmental Adaptability	Fleshing Ability
Muscle Expression	Cutability	Marbling	

The major high-yielding cattle breeds and their characteristics are as follows:<sup>454647</sup>

**The Black/ Red Angus breed**, originated in Scotland, are naturally polled cattle that have black/ reddish-brown colored hair and skin. Angus are medium framed, short-legged with a deep body and weighs 450-550 kilograms on average. These cattle are characterized by early maturity, low hot climate adaptability, ease of fleshing, moderate muscle expression, low cutability and excellent marbling. This breed is highly commercial and produces high quality meat.

**The Hereford breed**, originated in England, are both horned and polled and are brownish red in color with a white face, chest, underline, and switch. The Hereford breed is a medium sized breed weighing on average 500-600 kilograms. These cattle are characterized by medium-aged maturity, low hot climate adaptability, ease of fleshing,

<sup>45</sup> Breed Profiles Handbook. GAP

<sup>46</sup> Breeds of Beef Cattle. Animal Science. Instructional Materials Service

<sup>47</sup> Texas Adapted Genetic Strategies for Beef Cattle V: Type and Breed Characteristics and Uses. AgriLife Extension. Texas A&M System



moderate muscle expression, low cutability and moderate marbling. This breed is one of the easiest breed to fatten even on unimproved pastures and produces a good quality carcass.

**The Maine-Anjou breed**, originated from France, can be horned or polled and are very dark red in color with white marks on several body parts. The Maine-Anjou breed is a medium sized breed characterized by medium-aged maturity, low hot climate adaptability, medium fleshing ability, high muscle expression, high cutability and low marbling. This cattle breed yields lean and muscular carcasses.

**The Simmental breed**, originated from Switzerland, have various color patterns like red and white spotted, fawn and black colored. The Simmental cattle are characterized by rapid growth rate, medium-aged maturity, low hot climate adaptability, medium fleshing ability, high muscle expression, high cutability and low marbling.

**The Limousin breed**, originated from France, can be polled or horned and ranges in color from golden red to black. The Limousin cattle are large and muscular animals characterized by late maturity, low hot climate adaptability, medium fleshing ability, high muscle expression, high cutability and low marbling. This breed has a natural genetic ability to produce lean and flavorful beef.

**The Belgian Blue breed**, originated from Belgium, is a dual purpose breed that ranges in color from white to blue to black or a combination of them. The average weight of an adult bull ranges from 1,100 kilograms to 1,250 kilograms. The Belgian Blue cattle are large sized animals with rounded outline and are famous for their impressive muscling which is commonly referred to as ‘double muscling’. Belgian Blue breed surpasses all other beef breeds in carcass yield which is up to 80%<sup>48</sup>. This breed is characterized by early maturity, high feed efficiency for fattening, extraordinary muscle development<sup>49</sup>, ease of calving and short gestation period.

<sup>48</sup> Cattle Breeds – Belgian Blue. The Cattle Site

<sup>49</sup> About Belgian Blue. Belgian Blue Group



# MEAT PROCESSING FACILITIES

## 7. Meat Processing Facilities

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Bovine meat is processed in abattoirs that are notified by the MNFSR and are monitored by the Quarantine Department to ensure adherence to the quality guidelines set by the Government of Pakistan. There are currently thirty-four notified slaughterhouses in Pakistan that are located in major urban centers across Pakistan. There are also Government-operated slaughterhouses in a number of cities as well. All of the animals which are slaughtered at the Government-run or privately operated abattoirs are required to be examined ante-mortem and post-mortem by a designated veterinary officer. The inspection is carried out to make sure that the meat of the slaughtered animals is fit for human consumption and animals with medical abnormalities are separated from the herd. Anecdotal evidence suggests that slaughterhouses do not practice high standards of hygiene, including the Government-run facilities. In the domestic market, a majority of animals are slaughtered at the slaughterhouses that are not notified by the Government, and the meat is sold in the informal wet markets.

In the documented and notified slaughterhouses, bovine animals are brought from the mandis and are culled within a few hours after arrival. Almost none of the abattoirs have supplemental lairage (holding pens) typically required to hold and de-stress animals before slaughter. International practice recommends, supplemental lairage facilities to hold and de-stress the animals before slaughter. Box 4 discusses the impact of physiological changes on the quality of meat, which occurs due to stress experienced by the animal before it is slaughtered.

The formal meat sector finds it relatively difficult to compete with the informal sector due to various documentation requirements and costs. Informal wet markets avoid such costs by not following regulatory inspections, safety protocols and quality controls which are compulsory for the formal meat processors to follow. The formal meat sector is exempted from the General Sales Tax (GST) which provides a relatively even-playing field with the informal sector, an exception when compared with other documented sectors of the economy.

## 7.1 High Operating Costs of Animal Sourcing

Meat processors and exporters procure animals primarily from the Punjab and Sindh provinces. Some meat processors and exporters transport animals from various livestock markets using animal sourcing teams. The cost of animal sourcing is high because the livestock is fragmented across the country and there is a lack of aggregation. Some meat processors and exporters contract arthis and beoparies to procure bovine animals from the nearby mandis. In order to reduce operating costs, to develop traceability, and to improve quality, the development of feedlot farms is essential. Despite the archaic mode of animal procurement, a meat processing company with better contracting agents may find it cheaper to procure animals from a mandi than from a feedlot farm. The feedlot farms may have higher input cost than the informal small scale farms, which is why it is important to develop a diverse domestic and international market which is willing to pay a premium on bovine animals whose source is credible and certifiable. This entails entering into the higher value international markets such as East Asia and Europe. A detailed review on accessing international markets is provided in the subsequent chapter on 'Accessing International Markets'. Currently, a couple of large scale meat processing companies are outsourcing procurement through contract farming arrangements to a few feedlots on a limited scale. These meat processing companies have international clients in the GCC region who require meat traceability. This incentivizes the meat processing companies to follow better protocols and guidelines.

Without large scale investments in developing feedlots and a regulatory structure for contract enforcement, animal sourcing will continue to operate through the informal channels. Vertical integration of the value chain can resolve this issue as well. While most meat processors in Pakistan may not have the capital, technical expertise and operational plans to set up integrated feedlot farms, Tazij Meats and The Organic Meat Company Limited (TOMCL) are trying to vertically integrate the supply chain. TOMCL is currently developing a fattening farm, which is located next to its abattoir, with a holding capacity of 3,500 animals. The development of land and installation of steel structured sheds and pens is being undertaken. TOMCL plans to formally start operations in 2021. This may open Pakistan's access to higher value international markets and improve diversification beyond chilled beef products. Moreover, vertical integration will create economies of scale and help make Pakistan's product more competitive in the frozen beef segment.

## 7.2 State of Abattoirs

The slaughter of animals for meat is regulated by the local government in each province, under the 'The West Pakistan Animal Slaughter Control Act, 1963'. All animals which are sold domestically have to be verified and stamped by a Government official. The Government's oversight on ruminant slaughter is customary across the world, and the quality of the animal is verified procedurally. But due to various limitations, there is a shortage of Government-run slaughterhouses in Pakistan. For instance, there are just two Government notified slaughterhouses in Karachi, and none in Islamabad. The Government does not have sufficient capacity to oversee animal slaughter and meat production outside the larger urban areas.

Anecdotal accounts and reports suggest that the Government-managed abattoirs are ill-equipped, poorly managed, and unhygienic. The staff employed in these facilities acquire skills as apprentices and lack technical knowledge. Except for a limited number of modern abattoirs by a few companies (including Al Shaheer, Fauji Meat, PK Livestock, TATA, TOMCL etc.), most of the private sector and Government-run abattoirs are in poor condition. Even in modern abattoirs, the capacity to process meat parts from the carcasses is limited. Many meat processors do not have the capacity for vacuum packaging and processing frozen products as well.

In order to export high quality bovine meat products, the availability of mechanical abattoirs is important to have better defined procedures, reduce human errors, achieve economies of scale, and improve hygiene standards. With improved management systems in place within abattoirs, traceability of the animals is also possible, which is presently not ensured by the traditional slaughterhouses. The abattoirs need to have freezing facilities in order to access additional international markets for export of frozen beef products. In 2019, 89 percent of bovine meat exported by Pakistan was chilled and only 11 percent was frozen<sup>50</sup>. Improving meat processing capabilities will allow Pakistan to increase export of frozen beef products.

To produce frozen meat, an additional processing line is required which includes blast freezers or chambers. The half beef carcasses or quarters are stored in these freezers at temperatures ranging from -30°C to -35°C for 16 to 20 hours. The meat is processed into cuts in four hours. The carcasses are protected with plastic film under jute or fabric cloth and the meat cuts are stored in plastic films or vacuum packaged bags. Frozen meat stored at -18°C remains usable for 12 months.<sup>51</sup> While

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<sup>50</sup> ITC Trade Map

<sup>51</sup> Dr. Munoz G.C., (1991). Manual on meat cold store operation and management, Food and Agriculture Organization (FAO) Production and Health Paper. Rome.

installing a frozen meat processing line is capital intensive, many domestic meat processing companies do not believe that Pakistan's frozen beef products can compete in the international market, which discourages them from investing in these facilities.

#### **Box 4 – Impact of Physiological Stress in Cattle on Meat Quality**

The meat produced by cattle toughens with age but when the cattle is grown on high energy forage-based diet, the meat becomes tender. Consumption of high energy forage based diet increases the pre-slaughter growth rate which impacts solubility of intramuscular collagen. The cattle which is slaughtered following periods of rapid growth have immature intramuscular collagen and therefore, tender meat.<sup>52</sup>

When cattle is ready to be slaughtered, they are loaded onto trucks and transported to slaughterhouses. Long distance travel from farm to slaughterhouses can cause stress in animals due to poor handling, extreme weather conditions, mixing of unfamiliar animal groups and deprivation of food and water. Stress results in immune suppression that can lead to increased susceptibility to disease and pathogen shedding<sup>53</sup>. Stress also results in the breakdown of glycogen to lactic acid which affects the muscle pH level of the animal. The pH rises when the glycogen stores deplete and lactic acid cannot be produced. The longer animal are in transit, the greater the tendency to have a higher muscle pH, and darker and drier meat.

When animals are slaughtered, oxygen and glucose are no longer available via the blood stream. However, the animals need adenosine triphosphate (ATP) to maintain cell integrity and membrane ion pumps. If animals are stressed prior to slaughter, ATP will not be generated by glycolysis due to lower than normal level of glycogen. The glycogen depletes before slaughter and muscles do not acidify, therefore, resulting in the stiffing and passing into rigor more quickly than normal.<sup>54</sup>

<sup>52</sup> Tatum, J.D., (2011). White paper: Animal age, physiological maturity, and associated effects on beef tenderness

<sup>53</sup> Ashenafi D, et. Al., (2018), The Effect of long Distance Transportation Stress on Cattle: A Review. Biomedical Journal of Science & Technical Research, Vol. 3(3)

<sup>54</sup> Meat Preservation and Processing. Veterinarian Key.

The most commonly used slaughter practice in Pakistan is to shackle and hoist animals prior to slaughter. This also causes stress and results in reduced tenderness in meat. Globally, various stunning techniques are adopted prior to the slaughter to immobilize animals. With electrical stunning, an epileptiform seizure is induced so that animals become insensitive to pain. The stunning techniques trigger a massive secretion of epinephrine which might result in improvement in colour of meat of the animals which have endured stress prior to stunning. Animals are slaughtered as soon as possible after stunning to avoid circulation of epinephrine and blood splashing which might toughen the meat.<sup>55</sup>

After slaughter, carcasses are required to be stored at room temperature for 12 hours so that their pH level recovers. If carcasses are cooled too soon, it can sometimes result in tougher meat due to contraction of muscles during the cooling process. To prevent cold shortening, the carcasses are sometimes stimulated electrically soon after slaughtering, to speed up muscle metabolism in order to avoid contraction. After 12 hours, the meat is shifted to the chillers. These 12 hours are critical to ensure sufficient shelf life, good taste and texture of the meat. For muscles to soften and meat to tenderize, it requires to be stored for 3 weeks or more. Longer ageing also improves the juiciness and flavor of the meat, as well as its tenderness, therefore, the recommended ageing time before beef is consumed is between 10 to 21 days.<sup>56</sup>

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<sup>55</sup> Grandin, T., (1980). The effect of stress on livestock and meat quality prior to and during slaughter. *International Journal for the Study of Animal Problems*, 1(5), 313-337.

<sup>56</sup> Meat Preservation and Processing. Veterinarian Key.





# REGULATIONS PERTAINING TO BOVINE MEAT PROCESSING

## 8. Regulations Pertaining to Bovine Meat Processing

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The bovine meat sector is regulated by the Government to ensure that disease-free and good quality beef is available to the domestic consumer and the export market, at a reasonable price. Domestic sale and slaughter of animals is a provincial subject and is not regulated by the Federal Government. On the other hand, international trade of bovine meat falls under the purview of the Federal Government. Provisions in the provincial statutes have been adopted from the preceding federal laws. The key regulations pertaining to the production and export of bovine meat and their impact on the sector are discussed in the following sections of the report.

### **8.1 Pakistan Animal Quarantine (Import and Export of Animal and Animal Products) Ordinance, 1979**

In order to control the import of animals and the transmission of foreign diseases in live animals, the Government of Pakistan promulgated the Pakistan Animal Quarantine Ordinance in 1979. The regulation empowered the Government to quarantine animals and their products related to international trade and to prevent the introduction or transmission of diseases. Following the enactment of this Ordinance, the Government repealed the Livestock Importation Act of 1898. The Ordinance empowered the Federal Government to make rules regarding; conditions to be observed before, during and after import of animals or animal products, the procedure for landing, inspection, quarantine, seizure, detention and the treatment of animal and animal products, methods of testing for identification of diseases, issuance of health certificate and the release of animals.

This Ordinance was amended in 2002 by adding a few clauses regarding registration of the Animal Products Processing Plants. As per the amendment, all bovine meat processing plants have to register with the Animal Quarantine Department. The role of the Department is to ensure that the traded meat is fit for human consumption and also to oversee compliance with the national and international standards and guidelines that are determined by the Government of Pakistan for domestic consumption and the international markets for export.

## 8.2 Price Control and Prevention of Profiteering and Hoarding Act, 1977

The purpose of price control by the Government is to reduce the inflationary pressure and arbitrary pricing, but price control often results in distorting the market. The Act authorizes the Federal Government to regulate prices, production, movement, transport, supply, distribution, disposal and sale of the essential commodities listed in the Act, including beef. This Act was adopted by the provinces after the 18th Amendment, and beef was kept a part of this pricing mechanism.

The price control mechanism results in a number of issues for the bovine meat sector and is also a weak measure to control food inflation. Beef should not be part of this Act because:

- Beef is not an essential food commodity, unlike grains, dairy and tea. Beef is generally consumed by the middle income class and above in Pakistan.
- Poultry prices are not under the ambit of this Act across Pakistan, except Punjab and are determined by market demand and supply. The same principle should be followed in the case of beef as well. The removal of price control from the poultry sector has resulted in greater consolidation in the sector.
- Price control discourages the production of higher quality meat and forces producers to cut costs in order to meet the price ceilings. Resultantly, the operators in wet and informal markets resort to product adulteration. Concomitantly, it creates pressure on the documented sector to sell at artificially low prices.
- There is no price control on animal feed. While price controls on feed is also not recommended, in its absence increase in feed prices without increase in the price of meat makes the producers worse off.

### **8.3 West Pakistan Animals Slaughter Control Act, 1963**

The slaughter of animals in Pakistan is regulated by the West Pakistan Animals Slaughter Control Act as mentioned in section 6.2. This Act was renamed and adopted by the provincial governments of Punjab, Sindh, Khyber Pakhtunkhwa and Balochistan provinces, with minor amendments. The Act does not allow slaughter of bovine animals under the age of four months and all bovine animals are mandated to be slaughtered in abattoirs. These provisions of the Act are not generally practiced as many animals are culled when they are younger than four months and are slaughtered outside the abattoirs. The Act also defines a few other elements of bovine meat including its storage, transportation, and inspection for disease. The Act also states that all carcasses which are processed for meat should have the 'Government approved' stamp on them by a Government Veterinary Officer.

The Act mandates two meatless days during the week, meaning that the slaughter of animals is prohibited on Tuesday and Wednesday every week. This law was created during the 1960's when the government intended to reduce the consumption of meat due to the paucity of supply of bovine animals. This stipulation under the law is anachronistic and should be repealed. There are no other sectors with mandated weekly government holidays and bovine meat sector need not be an exception as it disrupts the supply of bovine meat in the market.

### **8.4 Provincial laws on bovine meat**

The Provincial Governments, in particular the Government of Punjab, have passed a few laws which encourage improvement in the bovine meat sector by developing provisions which regulate breeding, fodder and disease control for bovine animals in the province. Two provincial Acts are discussed below.

#### **8.4.1 The Livestock Breeding Act**

Passed by the Punjab Assembly in 2014, this Act regulates livestock breeding services to improve the genetic potential of breeds and protect the indigenous breeds of livestock in Punjab. The Livestock Breeding Services Authority was established under this Act by the Punjab Livestock Department. The authority regulates provision of breeding services, raises awareness regarding breeding and conserves and develops local genetic resources as specified in the Act. In accordance

with the Punjab Livestock Breeding Act 2014, the Livestock Breeding Service Authority issued Standards and Procedures for Breeding Animals in 2015. The standards include the Standard Operating Procedures for selection of breeding males for artificial insemination and natural service, physical infrastructure for semen production facilities, semen collection and preservation standards, artificial insemination training and training institutions, artificial insemination services and the guidelines for import and use of exotic semen.

The Livestock Breeding Act was passed by the Sindh Assembly in 2017 with similar provisions as in the Punjab Livestock Breeding Act 2014. With appropriate funding and implementation mechanism adopted by the provincial governments, this could be an effective regulation to help improve genetics for livestock. With greater private sector engagement, the Government should also focus on developing breeds for beef through artificial insemination.

#### **8.4.2 The Punjab Animals Feed Stuff and Compound Feed Act 2016**

The purpose of this Act is to regulate the manufacture, storage, supply, transport for sale and marketing of feed stuff and compound feed in Punjab. This regulation is to ensure standards of production and quality of feed stuff and to check adulteration and misbranding of poultry and livestock feed stuff and compound feed ingredients. This Act provides a list of feed stuff to be used in manufacturing compound feed. As per the Act, the production and sale of feed without a valid license and proper branding and labelling is prohibited. The Feed Stuff and Compound Feed Rules were issued in 2017 by the provincial government. The rules include the conditions for issuance of license for manufacturing and sale of feed stuff and compound feed, license fee, procedure of packing and marking, seizure of samples or sealing of the premises, procedure for analysis of samples and standards for approval of analytical laboratories.





# ACCESSING INTERNATIONAL MARKETS



## 9. Accessing International Markets

### 9.1 Creating market access to new destinations

The most critical issue which impedes Pakistan's export growth is limited market access. Without an active strategy by the government to enable access to new markets, Pakistan will be unlikely to increase bovine meat export, currently limited to only eight countries. In case of a diplomatic row, or stringent quarantine requirements by the GCC countries in the future, Pakistan's export market will be jeopardized. A detailed strategy should be developed to address this issue. The role of the government to expand market access is indispensable, since this is beyond the scope of the private sector.

Pakistan can only export bovine meat to a limited number of countries due to the prevalence of FMD. The MNFSR has decided to commence a five-year comprehensive plan across the country to diagnose and eradicate FMD. Its effective implementation is crucial for opening new markets for export. Apart from FMD, haemorrhagic septicaemia is another cause of high mortality of livestock in Pakistan. Pakistan primarily exports to the GCC countries and in order to expand to China, South East Asia, and parts of Europe, Pakistan needs endorsement from the World Organization for Animal Health (OIE). In order to reach a wider international market, Pakistan will need to comply with international regulatory requirements to ensure export of disease free meat.

Pakistan does not have access to the Chinese bovine meat market due to the prevalence of FMD in Pakistan. Pakistan has signed a memorandum<sup>57</sup> for establishing a FMD free zone where animal quarantine will take place. Access to the Chinese market will provide Pakistan with a good opportunity to enter a large market in the future. China has already granted Pakistan duty free access for bovine meat under the China Pakistan Free Trade Agreement – II (CPFTA-II) in 5 of the 6 categories as shown in Table 10.

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<sup>57</sup> An agreement was signed between China and Pakistan on 28th May, 2019 titled "Memorandum on the requirement of Foot and Mouth Disease free zone where vaccination is practiced."

HS Code	Product	Applicable Tariff	Concession under CPFTA - II
02011000	Fresh bovine carcasses	20	No Concession
02012000	Fresh bovine cuts, bone-in	6	Duty Free Access
02013000	Fresh bovine cuts	6	Duty Free Access
02021000	Frozen bovine carcasses	25	Duty Free Access
02022000	Frozen bovine cuts, bone-in	6	Duty Free Access
02023000	Frozen bovine cuts	6	Duty Free Access

Table 10 – Concessions to Pakistan for Bovine Meat Exports to China under the CPFTA-II

Source: Ministry of Commerce

China applies 13 percent Value-Added Tax on imports of beef products. For the WTO member countries, the most favoured nation duty rates ranges from 25 percent for frozen carcasses to 12 percent for most beef products and offal. Pakistan has a significant duty advantage over other competitors.

### Box 5 – Progressive Control Pathway for Foot and Mouth Disease (PCP-FMD)<sup>58</sup>

The World Organization for Animal Health (OIE) is the intergovernmental organization responsible for improving animal health across the globe. The OIE ensures transparency in the global animal disease situation, collects and disseminates veterinary scientific information, safeguards world trade by publishing health standards for international trade in animals and animal products, improve the legal framework of national veterinary services and promotes animal welfare through a science-based approach.

The OIE established a list of notifiable terrestrial and aquatic animal diseases for the year 2020 which includes 117 animal diseases, infections and infestations. The list

<sup>58</sup> OIE – World Organization for Animal Health

includes 13 diseases and infections which are specific to only cattle. The diseases include: Bovine anaplasmosis, bovine babesiosis, haemorrhagic septicaemia, enzootic bovine leucosis, bovine viral diarrhea, trichomonosis and others.

The OIE and the Food and Agriculture Organization (FAO) of the United Nations have adopted Progressive Control Pathway for Foot and Mouth Disease (PCP-FMD) to design FMD control programmes for the FMD endemic countries. The PCP-FMD is developed by the FAO and EuFMD (European Commission for the Control of Foot-and-Mouth Disease) to assist and facilitate affected countries to control the spread and reduce the impact of the FMD virus.

The PCP-FMD is a set of FMD control activity stages as mentioned below<sup>59</sup>:

Stage 0: FMD risk is not controlled. No reliable information is available

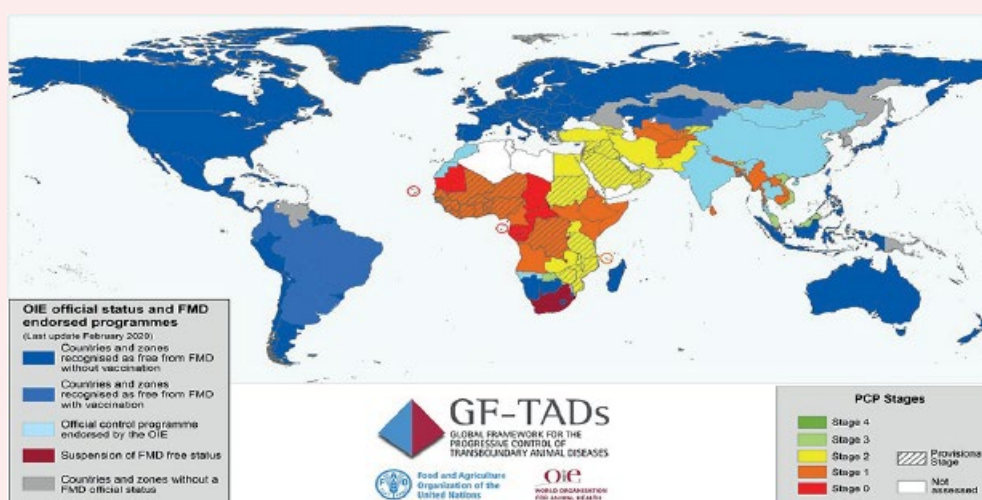
Stage 1: Risks and control options are identified

Stage 2: Impact of FMD is reduced in targeted sectors / areas

Stage 3: Virus circulation is reduced where the national Official Control Programme is applied

Stage 4: Achieve OIE recognition of freedom with vaccination

At present, Pakistan is on stage 2. The OIE member countries which have received endorsement of Official Control Programme for FMD from the OIE and have reached stage 3 are: China, India, Mongolia, Morocco and Thailand. FMD status of all member countries is shown in the image below.



<sup>59</sup> The Progressive Control Pathway for Foot and Mouth Disease Control (PCP-FMD). Principles, Stage Descriptions and Standards. FAO and OIE.

Constrained by a limited number of international destinations and sparse domestic supply, bovine meat processing plants operate at a low capacity. Bovine meat processing companies which export from Pakistan, compete with each other on price to acquire a share in a limited market space. The GCC region is the primary market for Pakistan's chilled meat products which are imported by a limited number of countries. With a large number of suppliers from Pakistan, and only a few buyers that procure bovine meat located in the GCC region, Pakistan's bovine meat exporters are at a disadvantage. The buyers leverage their position with Pakistan's meat suppliers to squeeze margins and develop sizeable credit lines. Since the market size is relatively small and the room for growth is limited by constrained demand, and multiple suppliers, meat processors operate at narrow margins to capture the market size and function on minimal operating profits. Until the time that Pakistan accesses other international markets, meat processing companies will benefit from diversifying and investing to produce a wider range of products.

## **9.2 Transportation limitations**

Developing logistics to increase exports is equally important for the meat industry to expand. Without cost effective and temperature controlled solutions available to transport bovine meat to the international markets, exports will be limited. Meat's sensitivity to temperature and anaerobic conditions is significantly higher than other commodities, which makes logistics critical for growth of the sector.

Chilled meat is transported via air from Pakistan to the international markets, which posits two limitations. Firstly, air freight is more expensive than shipments via sea. Air freight for chilled meat to the GCC countries costs around USD 1 per kilogram while the shipment through sea lowers it to USD 0.2 per kilogram. The cost of air freight has increased to USD 2 per kilogram in 2020 due to Covid-19. Secondly, chilled meat also competes with other commodities for space during transportation via air. During the mango harvest season, there is higher demand for cargo, and with a limited number of flights to the GCC countries, air space becomes limited. There are no freighter services available to the GCC countries that can transport chilled meat from Pakistan. Conventionally, frozen beef is transported through the sea. With appropriate cold chain, anaerobic conditions and temperature controls, it is possible to ship chilled meat. Australia and New Zealand export chilled meat via sea to the nearby countries.

Pakistan has recently obtained specialized containers which maintain freshness of the meat and support trade of bovine meat via sea. This lowers the cost of shipping significantly, relative to air

cargo, and allows for a significant increase in export quantity of chilled meat. Meat processors in Pakistan are slowly adapting to this innovation in shipping. This shipping method can only be used as an alternative to air freight for the nearby countries. Well packaged and preserved bovine meat in chilled conditions can be stored for up to 21 days with the current available technology in Pakistan.<sup>60</sup> In the longer run, Pakistan should focus on developing its capabilities to process de-boned meat cuts and capture a larger market share in that segment. This will help Pakistan to generate greater export value from smaller shipments. More importantly, Pakistan should focus on expanding its product range by including frozen beef.

### **9.3 Improved packaging**

Increasing export of chilled meat through sea will also require meat processors to invest in vacuum packaging, which will increase the shelf life of chilled bovine meat to 14 days, making it viable to export larger quantities. Controlled Atmosphere Packaging (CAP) increases the shelf life of chilled meat by 8 to 15 times. CAP increases storage life by packaging in gas-impermeable pouches with carbon-dioxide and no oxygen.<sup>61</sup> The investments in advanced packaging will have to be complemented with better labelled products, which comply with labelling related standards. Many countries and regions have specific labelling requirements which include information regarding production (slaughtering and freezing), expiry date, country of origin, name and address of the meat processor, fat and oil content, halal stamp, and weight.

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<sup>60</sup> Based on an interview with the CEO of TOMCL

<sup>61</sup> Gill, C.O., (2003). Controlled atmosphere packaging of chilled meat. Meat industry research institute of New Zealand. New Zealand.





# EXPORT COMPETITIVENESS OF THE BOVINE MEAT SECTOR



## 10. Export Competitiveness of the Bovine Meat Sector

Pakistan was one of the fastest growing bovine meat exporter in the last decade. The growth achieved by Pakistan is significant despite the bottlenecks and issues highlighted in the previous chapters. Pakistan has been able to capture the low value added segment through the export of chilled carcasses to the GCC countries. There is significant room for improvement and growth in the sector by adopting better livestock rearing practices and focusing on value addition in meat processing.

Table 11 highlights Pakistan's production and export value compared with the three largest exporters of bovine meat.

	Pakistan	India	Brazil	Australia
Chilled Bone-less Export Price(USD/tonne)	4,400	3,000	4,400	5,600
Chilled Bone-in Export Price(USD/tonne)	4,200	N/A	N/A	5,200
Number of Cattle & Buffalo (head)	87,823,000	303,314,549	216,093,981	24,723,458
Production (tonnes)	2,221,000	2,521,736	10,200,000	2,351,793
Cattle Yield / Carcass Weight (kg)	130	103	314	270
Quantity of Beef Exports (tonnes)	60,223	1,098,722	1,553,032	1,330,600
Value of Beef Exports (USD Million)	229	3,109	6,492	7,630
Chilled Export (% in value)	92%	1%	14%	35%
Frozen Export (% in value)	8%	99%	86%	65%
Export Quantity as % of Production	3%	44%	15%	57%
Live animal exports (head)	0	0	180,693	1,780,103

Table 11 – Production and Export Data Comparison of Pakistan and Other Countries

Source: Food and Agriculture Statistics Database, ITC Trade Map

As Table 11 shows, Pakistan is not as price competitive as India and Brazil. India has low prices since it exports only buffalo meat which has limited domestic demand. India exports almost half of its total animal production. India has the largest buffalo stock in the world which is primarily used for dairy production. A large number of buffaloes which have surpassed their milking age are culled as a by-product of the dairy sector. This makes it difficult to compete with India's prices of carabeef. What works in Pakistan's advantage is that India focuses on frozen beef, since it is a high volume and low quality product. This makes it price sensitive, and better utilized in food processing rather than retail and food service industry such as restaurants and hotels. Unlike India, Pakistan utilizes a limited number of buffaloes for export purposes and mostly relies on cattle for the export of beef. Within the domestic market, there is a preference for cattle meat over buffalo meat. Carabeef is substituted with cattle beef within Pakistan's domestic market but the price differential between both is not significant due to the price control regime. Since older buffaloes are a substitute to cattle meat in Pakistan, and not a by-product of the dairy sector like in India, they cannot be aggregated, slaughtered, and exported at low prices.

Both Brazil and Australia are able to utilize their large natural grazing land in the production of bovine meat. Table 12 below provides a comparative analysis of pasture lands in four countries including; Pakistan, India, Brazil and Australia. The vast rangelands of Brazil and Australia provides adequate pasture for bovine animals and enables them to rear around 95 percent of their beef cattle on pastures, rather than in feedlots. In Brazil, the use of feedlots is on the rise, because of a significant acreage of land is now being used for cultivation of soya bean. Even so, Brazil has an inherent advantage of having large pasture lands which results in its low cost of production.

Country	Land under permanent meadows or pastures (1,000 ha)
Australia	327,589
Brazil	173,361
India	10,258
Pakistan	5,000

Table 12 – Rangelands in Pakistan and Other Countries

Source: Food and Agriculture Statistics Database

As Table 12 indicates, Pakistan has limited land available for pastures, therefore, Pakistan needs to establish feedlots to increase production of bovine meat.

## 10.1 Fodder cost

Nutrition of cattle constitutes around 75 percent of the total input cost of raising bovine animals at the feedlot fattening farms. By introducing cost-efficient varieties of animals which have higher proportional gain to food input, farms can become price competitive. In order to be truly globally competitive, the price of silage needs to be at parity with the international prices.

As mentioned in Table 13, more than half of the existing livestock uses fodder and crop residue as feed input and about forty percent uses grazing land.

Source of Feed as Feed Input	Contribution (%)
Fodder and crop residues	51
Forage/grazing	38
Cereal by-products	6
Post-harvest grazing	3
Oilcakes, meals, animal protein	2

Table 13 – Contribution of Different Sources of Feed as Feed Input in Pakistan

Source: Fodder Research Programme, NARC, Pakistan

Since a large number of ruminants feed on crop residue and grazing, the domestic prices of bovine meat remain relatively low. Buffaloes and cows get a mix of a wide variety of feed which increases milk production. After a certain age, when the cost of feed exceeds the milk production, the animals are ‘retired’ and sold for meat.

There is limited utilization of high protein and more nutritious form of input feed and there are supply problems with fodder crops. Different fodder crops are available during the Kharif and Rabi seasons and the fodder crops vary. The high quality feed input which is used as silage in Pakistan includes: cotton seed cake, wheat bran, maize cake, and soybean. Since the cost of silage is higher than what the rural households can afford, the farmers do not use high quality feed inputs. Moreover, it is uneconomical for the small landholding farmers to invest in high value nutrition for large ruminants.

## Box 6 – Feed for Bovine Animals<sup>62</sup>

Green fodder is cultivated on 6.1 million acres (2.4 million hectares) in Pakistan, which is only 9% of total cropped area of 67.9 million acres (27.4 million hectares). The land cultivated for green fodder is insufficient to feed approximately 200 million livestock including; goats, sheep, cattle and buffaloes. Insufficient quantity of green fodder leads to poor animal health and low meat yield. Moreover, green fodder diet does not provide all the required nutrients required by the bovine animals. This is why feedlot fattening farms use a combination of green fodder and concentrates as feed for fattening animals to ensure high meat yield.

The sources of feed for bovine animals includes: green fodder, mix crop, silage, concentrates and other substitutes.

**Green Fodder:** Green fodder is available through-out the year except during the winter months of November, December and January when there is a shortage. Bovine cattle require green fodder up to 40% of its body weight.

**Mix Crop:** Several crops are mixed and used as feed for animals. The recommended combination is oat and berseem/ lucerne which is available across Pakistan.

**Silage:** Silage is used as feed during the period when green fodder is not available. 98% of silage is preserved green fodder or maize. The Pakistan Agricultural Research Council (PARC) has developed several hybrid varieties of silage. These varieties are available in the market after 2-3 years of testing and approval by the PARC.

**Concentrates:** Concentrated feed formula is locally called wanda. An animal requires 5 kilograms of concentrated formula per day to produce high yield of meat.

**Other substitutes to green fodder:** Other substitutes include by-products of wheat and sugar-cane. Cultivation of soya bean as feed is gaining popularity in Pakistan but it would take at least 4-5 years for livestock farmers to adopt soya bean as an animal feed.

<sup>62</sup> Fodder Research Program, NARC

To have reliable and globally competitive bovine meat production, high quality feed which is rich in protein is essential for professional livestock farming. The domestic research on fodder production is mostly tailored towards supporting mulching animals, which has proven to be successful since Pakistan's milk production yields are amongst the best in the world. There is insufficient focus on developing high quality and reasonably priced diets for cattle feed that can help animals in gaining optimum weight. There are several challenges in the availability of existing fodder since lower annual production of cotton seed has reduced the availability of cotton oil cakes as animal feed. The soybean meals have provided adequate nutrition for the poultry sector and could be a good source of nutrition for the animals raised at feedlot fattening farms. On the other hand, taxes and duties on the import of soybean makes it relatively expensive and increases the cost of rearing animals. Until Pakistan achieves greater sufficiency in domestic production of soybean, Pakistan should consider reducing duties and taxes on soybean which would benefit both, the poultry and the bovine meat sectors. Taxes and duties can be reconsidered when Pakistan is in a better position to localize soybean. Furthermore, a higher production of maize is beneficial for Pakistan since it can also be used as a nutritious input for making silage mix.

## **10.2 Price Control Regime**

The domestic price control regime, regulated by the government plays a distortionary role in the market and discourages investment in the sector. The government regulated prices for bovine meat, in most cases, are lower than the cost of production, which is a disincentive to invest in the sector. The input costs for a meat processor are high as compared to the costs incurred by a small landholding farmer who feeds cattle on grazing land. By eliminating the arbitrary price ceiling, meat processors will find it more feasible to invest in the market and provide a wider range of bovine meat domestically. With a price ceiling in place, there is no incentive to introduce better varieties of bovine animals which cater to a more refined palate. The removal of price ceiling in the poultry sector has helped the sector become more dynamic and increased competition and productivity.

Chilled or frozen meat which is sold in retail shops in urban cities do not have any price ceiling and is sold at different prices. There is a demand for specific cuts by consumers and the restaurant industry, which provides an incentive for the meat processors to cater to niche demands within the domestic market. The retailers do not have options of specific grade animals and have to source from the meat processors who suffer from their own limitations. Eliminating price controls will

allow the market to offer a wider range and quality of products to the domestic and international markets and encourage higher exports.

### **10.3 Technology acquisition and investments**

The exports from the bovine meat sector of Pakistan has grown despite the limited number of importing countries. Pakistan has the potential to expand into more markets, given its ability to develop disease free zones. To increase its productivity, Pakistan will need to adopt better technology at almost all stages of production. The adoption of technology will help in:

- Developing high-yielding animal varieties suited for meat production
- Developing feed mixes suited for optimum weight gain
- Developing better on farm management practices for livestock
- Ensuring comfortable transfer of livestock from farm to abattoir
- Ensuring hygienic and optimal culling of livestock
- Introducing value added processing for cuts and de-boning
- Improving packaging, labelling and storage of meat products
- Reducing cost of international transportation

Joint Ventures (JVs) with internationally reputed companies will ease acquisition of technology during each stage as mentioned above. They will also help consolidate international marketing channels for Pakistan.

A few meat processing companies are already working with international investors and employing international consulting teams to improve their processing capabilities. For instance, Tazij Meats secured an investment of USD 29 million from their partners in the UAE and Bahrain in 2020 to set up a modern animal production farm. The farm is based on 135 acres of land in Chunian near Lahore and Tazij Meats plans to develop a modern slaughterhouse in Lahore as well. Similar investments and developments in the sector will boost domestic production of good quality meat products in Pakistan.



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## 11. Bovine Meat Analogues

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Alternates to bovine meat, referred to as meat analogues, is a growing market in advanced countries and may become a mainstream food staple, substituting conventional bovine meat. The pace of adoption for meat analogues has been slow, but recent growth in the sector could be indicative of a greater shift toward meat analogues in the future. Some of the largest meat producing companies, such as Tyson, and the international fast food chains, such as Hardees and McDonalds, are introducing meat analogues in their product range. The meat analogues may posit a risk in the growth of the bovine meat industry in subsequent years. Advances in food technology, economies of scale and changing consumer preferences are generating a market for meat analogues. So far, both production and price have limited the growth of meat analogues. But this can change quite quickly with the introduction of better technology for production of meat analogues.

An increasing number of vegans, health conscious individuals with a concern for the environment and animal rights activists are inclined to include meat analogues in their diet. Conventional farming for production of bovine meat has environmental drawbacks, which includes excessive use of pastoral land and its contribution to greenhouse gas emissions. Alternatives to bovine meat have been introduced since the 1960's in the form of Texturized Vegetable Protein (TVP) obtained from the soybeans. Due to the TVP's significantly lower price than bovine meat, it offers a cheaper meat alternative to manufacture canned meat, meat extender in beef patties and pet foods. The adoption of meat alternatives has been a slow and challenging process, since mimicking the taste of beef is not that simple. Recent advances in food technology and mainstream demand for meat alternatives has increased interest in developing meat alternatives and increasing production.<sup>63</sup>

The two major meat analogues are cultured meat (lab grown meat) and plant based derivatives. Some details on their developments are discussed in the following sections of the report.

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<sup>63</sup> Ismail, I., et. Al., (2020), Meat analog as future food: A review. Journal of Animal Science and Technology

## 11.1 Plant-based Meat Analogues

The meat industry is being disrupted by technology-based innovations, especially with the advent of plant-based meat alternatives. The plant-based protein diet has a growing market in the USA. Recently, plant-based meat manufacturers have also stepped into the Asian market, mainly China. These products are produced by combining proteins from soy or yellow peas with potato starch, beet juice and other ingredients to closely mimic beef's juiciness.

The rise in the popularity of plant based meat analogues can be gauged by its acceptance in larger fast food chains. Plant based meat analogues produced by Impossible Foods and Beyond Meat, have been placed on menus of many big fast food chains. For instance, fast food chains have launched meat analogues alongside their signature burger series. Hardees has a "Beyond Thickburger" and Burger King has an "Impossible Whopper" in a wide range of plant-based meat products on their menu. McDonald's, Tim Horton's, Subway, Hardee's, Dunkin', Morningstar, Tyson Foods, Nestlé and grocery stores across the USA have introduced plant-based product lines.<sup>64</sup>

**Beyond Meat**, founded in 2009, is a Los Angeles based plant-based meat producer that launched its products in 2012. In 2020, Beyond Meat announced collaboration with McDonald's and launched in China.

**Impossible Foods**, founded in 2011, is a California based plant-based meat producer. In July 2016, it launched its first product - the Impossible Burger. Now, the burger patties are available at all leading superstores in the USA, including Walmart.

Interestingly, retail growth of bovine meat products is being generated by plant based analogues as opposed to conventional bovine meat products. In 2019, retail meat sales in the USA fell by 0.4%, whereas, the sales of protein-based meat alternatives grew by 8%, according to Nielsen, a market-research firm. While the volume of sales for meat analogues is low, growth is indicative of increasing consumer acceptance.

As growth of the plant-based meat industry increases, it will cause disruption in existing the economic activities and raise questions pertaining to its regulation and labelling requirements. Approximately 800,000 cattle ranchers in the USA are lobbying against Impossible Foods and

<sup>64</sup> Reiley, L. (2019). 'Veggie burgers were living an idyllic little existence. Then they got caught in a war over the future of meat'. The Washington Post. 25 August. Retrieved from: <https://www.washingtonpost.com/business/2019/08/25/veggie-burgers-were-living-an-idyllic-little-existence-then-they-got-caught-war-over-future-meat/> on 29 December 2020

Beyond Meat. In 2019, officials in nearly 30 states proposed bills to prohibit companies from using words such as meat, burger, sausage, jerky or hot dog unless the product came from an animal that was born, raised and slaughtered in a traditional way. Disruptions in the demand for bovine animals caused by plant based meat derivatives will fuel conventional farmers' concerns for their livelihood.<sup>65</sup>

For now, plant-based meat is more expensive than conventional meat but it could become price competitive with growth in operations of companies like Beyond Meat and Impossible Foods. The Research and Development (R&D) and product innovation of plant-based meat analogues by major food companies like Nestlé will result in further production efficiencies.<sup>66</sup>

## 11.2 Cultured Meat

Singapore has recently become the world's first country to allow the sale of cultured meat by granting San Francisco based start-up, Eat Just Inc., regulatory approval to sell its lab-grown chicken in the country.<sup>67</sup> Although, this is the first time that lab-grown meat has been introduced to the retail shelves, R&D to produce it was underway since the last two decades. Figure 5 shows a timeline on the development of cultured meat.

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<sup>65</sup> Bunge, J. and Haddon, H. (2019). 'America's cattle ranchers are fighting back against fake meat'. The Wall Street Journal, 27 November. Retrieved from: <https://www.wsj.com/articles/americas-cattle-ranchers-are-fighting-back-against-fake-meat-11574850603> on 29 December 2020

<sup>66</sup> Wiener-Bronner, D. (2020). 'There's a pork shortage, and Impossible Foods is launching plant-based sausage'. CNN Business, 7 January. Retrieved from: <https://edition.cnn.com/2020/01/06/business/impossible-foods-pork-ces/index.html> on 29 December 2020

<sup>67</sup> Woodyatt, A. and Wiener-Bronner, D. (2020). 'Singapore becomes first country to approve lab-grown meat'. CNN Business, 2 December. Retrieved from: <https://edition.cnn.com/2020/12/02/business/lab-grown-chicken-intl-scli-scn/index.html> on 27 December 2020



Figure 5 – Timeline on the Development of Cultured Meat



The proponents of cultured meat argue that it is a potentially healthier and more efficient alternative to conventional meat. They argue that cultured meat (only poultry at the moment) involves approximately 7-45 percent lower energy use, 78-96 percent lower GHG emissions, 99% lower land use, and 82-96 percent lower water use depending on the product compared.<sup>68</sup>

Scaling and reducing the cost of production for cultured meat will prove to be a technological challenge for the companies. It is postulated that over time, technological breakthroughs in the field will significantly reduce the cost of production of cultured meat. In the future, even if cultured meat is cheaper and efficient to produce, its success hinges on public acceptance. A survey was conducted in 2020 to determine public acceptance for cultured meat in Australia. 72% of young adults did not accept the idea of cultured meat, although most of them were of the opinion that it was a viable idea for transitioning to more sustainable food options and improve animal welfare. Almost a third of them were prepared to try it.<sup>69</sup>

The cultured meat industry is growing as a number of innovative startups have begun to attract sizeable investments and media attention. Among the notable companies developing cultured meat are the Dutch Companies Meatable and Mosa Meat, San Francisco based start-up Eat Just Inc., California-based Memphis Meats and JUST, and Israel-based Future Meat.<sup>70</sup>

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<sup>68</sup> Toumisto, H.L., and Teixeira de Mattos, M.J., (2011), Environmental Impacts of Cultured Meat Production, Environmental Science and Technology, ACS Publications.

<sup>69</sup> Whiting, K., (2020). 'How soon will we be eating Lab-grown meat'. World Economic Forum, 16 October. Retrieved from: <https://www.weforum.org/agenda/2020/10/will-we-eat-lab-grown-meat-world-food-day/> on 27 December 2020

<sup>70</sup> Low, S., (2020). 'Are you ready to eat lab meat?'. Forbes, 1 June. Retrieved from: <https://www.forbes.com/sites/susanlow/2020/06/01/are-you-ready-to-eat-lab-meat/?sh=247af6664a95> on 27 December 2020)





# SWOT ANALYSIS

## 12. SWOT Analysis

Although, the growth of bovine meat export from Pakistan has outpaced the global growth of bovine meat export, the sector is characterized by several issues which threatens future growth of the sector. This section summarizes the strengths and weaknesses of the sector along with the potential threats and opportunities for future growth.



### Strengths

- Pakistan was one of the fastest growing bovine meat exporter in the last decade. Since 2010, Pakistan's bovine meat exports have increased by 250 percent outpacing global growth of exports of bovine meat which increased by 60 percent.
- Within the GCC market, Pakistan has a significant market share of 56 percent in chilled carcasses, 63 percent in chilled boned cuts and an overall share of 26 percent of total chilled bovine meat imports by the GCC countries.
- The meat industry is exempted from the General Sales Tax. This provides the industry with a relatively level playing field with the informal sector, an exception when compared with other documented sectors of the economy.



### Weaknesses

- Pakistan's share in the global bovine meat market, valued at USD 52 billion in 2019, is minimal. This is because Pakistan's exports are limited to the GCC countries, Vietnam and Afghanistan.
- Rearing cattle in traceable backgrounding nurseries and feedlot farms is not practiced. This hinders the fulfilment of traceability requirements for higher-end international markets.
- Cattle in Pakistan is not reared to provide beef and is a by-product of dairy farming. This puts Pakistan at a disadvantage against the top bovine meat exporting countries. Livestock farmers prefer rearing heifers to bull calves. Heifers are reared for milk while bull calves are culled for meat at a young age.



- In 2019, Pakistan exported chilled bovine carcasses which constituted 80 percent of the total bovine meat exports. This is in direct contrast to the leading global exporters which indicates that Pakistan's meat exports lack diversification.
- Prevalence of livestock diseases impact mortality of livestock and access to the international markets. The prevalence of haemorrhagic septicaemia causes high mortality of livestock. The FMD is endemic in Pakistan, which has limited its export market to only eight countries. Markets like Malaysia, Indonesia, Russia, and China are inaccessible to Pakistan due to prevalence of the FMD.
- Access to the international markets is limited due to weak implementation of SPS standards, quarantine arrangements for live animals and absence of disease free certifications.
- Bovine meat exported by Pakistan is not price competitive due of several reasons. Firstly, Pakistan largely exports chilled beef via air which is significantly more expensive than sea cargo. Secondly, there is limited air space for meat transportation which increases the freight cost. Thirdly, the exporters compete with each other on price to acquire a share in the confined market space, thereby reducing the selling price of the meat.
- Despite having one of the largest livestock herd in the world, Pakistan's livestock is characterized with issues of low yield. The yield gap between the yield of the top three global bovine meat exporting countries and Pakistan is 102 kilograms per animal. Moreover, smaller animal sizes make it difficult to obtain premium cuts.
- Pakistan's meat does not have high value brand association due to which it cannot be sold as a premium product in the GCC market.
- The price control regime puts the bovine meat industry at a disadvantage when compared with the informal sector.



## Opportunities

- Within the global trade of USD 52 billion, the market for frozen bovine meat is approximately USD 27 billion. Pakistan's frozen bovine meat exports have not grown, while the chilled meat exports are increasing over time. This signifies that Pakistan has opportunities to increase its exports through processing, de-boning, and providing cuts and also within its existing export destinations with investments in frozen meat.

- There is a high market potential for Pakistan in China where meat export amounted to USD 8.2 billion in 2019. With rising income levels in China, consumption of bovine meat will keep increasing. Moreover, due to the ASF outbreak in China, the domestic production of pork fell which encouraged substitution to beef. The domestic production of beef in China is unable to keep up with the rise in domestic demand. This provides Pakistan an opportunity for market expansion.
- By expanding its export destinations, Pakistan has an opportunity to access markets that have greater demand and purchasing power. This will increase export revenue for Pakistan.
- Pakistan has an opportunity to fetch a higher price by processing carcasses, de-boning them and producing cuts as some importing countries prefer de-boned meat and packaged cuts since it reduces the need to handle large scale operations of meat processing in importing countries.
- Pakistan's share of exports to the GCC countries in all three frozen meat sub-categories is minimal. Pakistan has only 2 percent market share of frozen carcasses and cuts and 0.03 percent share in the boneless sub-category. There is an opportunity for Pakistan to capture greater market share by increasing its capability to produce frozen bovine meat products.
- The abattoirs are presently underutilizing their production capacity and are functioning at one-quarter of their full capacity.
- Since, the cost of exporting bovine meat through sea routes is cheaper than air routes, Pakistan has an opportunity to become price competitive by shifting to sea transport for the export of bovine meat to the nearby countries.



## Threats

- The absence of government support to remove price control on beef results in an un-even playing field which disincentives the private sector to invest in the bovine meat sector.
- High capital expenditure and difficulty in acquiring land discourages investment in the backgrounding nurseries and feedlot farms.
- Beef farming provides lower returns than dairy farming. Unless the incentive structure of beef production improves to provide better returns, rearing meat producing varieties will not be feasible in Pakistan.
- With the absence of a regulatory structure for contract enforcement, animal sourcing will

continue to operate through the informal channels thereby hampering the growth of bovine meat export.

- Certain stipulations within the West Pakistan Animals Slaughter Control Act 1963 limits supply of meat which hinders growth of the sector.
- Since, most of Pakistan's bovine meat exports are to the GCC countries, a trade ban from any GCC member country would result in the reduction in export volume and value for Pakistan.
- Increased adoption of advanced production technologies in Argentina, Brazil and India could enable them to capture the GCC market and reduce Pakistan's market share.
- Due to the prevalence of COVID-19, the GCC countries might increase compliance requirements for Pakistan on the export of bovine meat.
- The devaluation of Brazil's or India's currency would make their exports to the GCC countries and the world more price competitive and reduce Pakistan's market share, and future prospects.
- Adoption of lab grown beef and plant based meat substitutes in Pakistan might have a negative impact on the demand of naturally produced beef in the future.



A photograph of a large-scale cattle operation, likely a feedlot. Numerous cows of various breeds (black, brown, and white) are housed in rows of wooden pens. The pens are separated by wooden fences. In the background, there are tall utility poles with power lines stretching across the sky. The ground is dirt and appears somewhat muddy. The overall scene suggests a high-density, industrialized farming environment.

# POLICY RECOMMENDATIONS



## 13. Policy Recommendations

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There is an absence of a cohesive policy framework to significantly increase exports of bovine meat from Pakistan. The Federal and Provincial Governments need to develop a plan which increases productivity in meat production and exports from Pakistan. The Halal Authority Act was passed in 2016 with the establishment of the Pakistan Halal Authority, which is responsible to provide halal certifications. While halal accreditation is required to export to certain countries, Pakistan already has access to the GCC countries which consume only halal meat.

A fresh outlook is needed to develop a national policy on bovine meat exports. The government, while keeping the challenges in view, need to adopt strategies for growth in meat exports. The government should develop a plan in consultation with the meat processing and exporting companies to encourage vertical integration in the value chain. The key actions needed are as follows:

### **Establishing disease free zones**

The development of disease free zones (DFZs) is the most critical factor in increasing Pakistan's export. Without the DFZs, Pakistan will not be able to access international markets and the exports will remain limited to a few countries. The prevalence of bovine diseases, in particular the FMD, prohibits Pakistan from accessing high value international markets. The Punjab Animal Health Act, passed in 2019 which provides a regulatory mechanism to declare a DFZ and assigns powers to the Chief Veterinary Officer to control the spread of diseases in the DFZs. With a legislative mechanism in place, the Punjab Government needs to speed up efforts to develop the disease free areas, with other provinces following suit.

The Cholistan region, which includes the districts of Bahawalpur, Bahawalnagar, and Rahim Yar Khan, can be developed as a DFZ since it is bound by a river in the west and borders with India on the east. Additional regions should also be identified in other provinces which are suitable for the establishment of DFZs. The OIE has developed a Terrestrial Animal Health Code which can be implemented in the Cholistan region, to help secure Pakistan's transition to Stage 3 of the PCP-FMD. This will give Pakistan greater access to the international markets. The Federal Government should work with the OIE to have the region declared as DFZ. The quarantine and vaccination efforts within

the DFZs will require concentrated efforts of the Livestock & Dairy Development Department Punjab and the Ministry of National Food Security and Research. It will require vaccination to be administered to all livestock in the region. In addition, the government will be required to set up diagnostic laboratories and restrict movement of the animals in controlled areas.

## **Land acquisition and development of feedlot farms**

Whilst the DFZs are being established, the government should simultaneously prepare a plan to lease land to the private sector in the Cholistan region for establishment of feedlot farms dedicated for the production of export quality beef. A feedlot hub can be envisioned in different parts of Pakistan, starting from the Cholistan region. These feedlots should be provided with minimum export targets based on their herd size and international best practice, which can be re-negotiated as required. Land acquisition is capital intensive and it can be difficult to acquire large tracts of land due to legal and procedural difficulties. The government has ample unused land which can be used for this purpose. While the DFZs are being established, the government can demarcate land which will be well suited to develop feedlots within these DFZs. In particular, the government can work with the bovine meat processors, to identify land requirements and growth prospects. The land should be strictly leased for the purpose of developing feedlots and renewed after a feasible period of time based on the pre-agreed performance metrics.

The government can minimize its expenditure by leasing land at low rates and let the private sector invest in developing the infrastructure within the allocated land. The development of a feedlot within a stipulated timeframe should be mandated, to discourage any misuse of land and should only be allocated to meat processing companies which have an established track record of export. Land should also be allocated for the ancillary services required by these feedlots, such as veterinary and diagnostic services.

The Government of Punjab established a similar initiative to streamline public and private investments in the forestry sector to reduce deforestation. The South Punjab Forest Company (SPFC) was created in 2015 as a not-for-profit company which offered 99,077 acres in the form of 187 forest lots for commercial forestry and range management activities. This initiative was however abandoned due to a change in the government. Given the differing preferences of the governments, such plan should be passed through an Act of the provincial government to maintain consistency of operations and provide assurance to the private sector investors.

## **Breeds for beef**

The Livestock Wing of the MNFSR should develop plans to import heifers of high quality breeds identified in this report along with semen for artificial insemination. Since, the Livestock Wing has the responsibility of approving imports of live animals and bovine semen it should also identify breeds which are well suited for beef production. It can start developing backgrounding nurseries, through a non-profit subsidiary, to prepare animal stock for feedlots to be developed in DFZs. The subsidiary should sell these animals to the feedlots through a bidding mechanism and envisage rearing a sizeable herd to cater to a growing demand from the feedlots. This will be beneficial, since there are no domestic breeds developed for producing beef and the local varieties are suited for dairy production. The Federal and Provincial Governments can allocate funds and resources to subsidize import of semen and heifers for breeding in the first few years of establishing feedlots. Aberdeen Angus should be a high priority breed to adopt, if it can adapt to climatic conditions of Cholistan. Angus has global and domestic brand recognition, provides high quality beef, and has good weight gain characteristics.

## **International investments**

A DFZ with a reliable legal framework will generate international interest for investments. Anecdotal evidence suggests that a number of international investors have expressed their desire to invest in the bovine meat sector of Pakistan, but are hesitant to commit their investments due to a lack of policy commitment and reliability. With oversight and regulations defined under an Act, the international investors will be confident to invest in Pakistan.

## **Financing herd expansion**

The government can provide subsidized credit to the feedlots located in the DFZs to import livestock as working capital and for capital investments to set up feedlots. Since a sizeable proportion of stock in the DFZs will be exported, the Government will be financing exports. The mark-up rate offered to the meat processing and exporting companies can be concessional similar to the Export Financing Scheme (EFS) offered to the textile sector with an appropriate credit limit. The Brazilian Government also offers subsidized financing to its bovine meat industry. Pakistan should provide low mark-up loans to generate investments in feedlots in the DFZs.

## **Removing price controls and meatless days**

The two archaic regulatory controls which restrict the growth of bovine meat industry in Pakistan are price controls and regulated meatless days. Both laws are outdated and do not serve their purpose as initially intended. A detailed account of why beef should be removed from price controls has been mentioned previously in this report. The Provincial Governments should formulate independent laws on animal slaughter as the current laws have been adopted from the West Pakistan Animal Slaughter Control Act, 1963 without updating its provisions. Having meatless days is counter-productive as it limits the supply of fresh meat to the domestic market, which can raise prices. The provinces should repeal this law since it does not serve its original intent to protect the animal herd size. In the 1960's, the cattle size was small and the government wanted to limit the slaughter of animals to increase domestic cattle stock. Since then, the cattle stock has been increasing, but the law has yet to be repealed.

## **Export restrictions on animal feed**

The government should impose export restrictions on export of animal feed and components of animal feed, including corn and hay. There should be an emphasis on utilizing components of animal feed for fattening of animals to produce better quantity and quality of meat, instead of exporting it. The export of feed results in insufficient supply of feed for domestic livestock rearing, thereby, leading to high input costs.





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