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Composition and Pattern of Livestock Products' Export in the Context of WTO Regime

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PATTERN AND COMPOSITION OF LIVESTOCK PRODUCTS' EXPORT IN THE CONTEXT OF THE WTO

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SUMMARY

The continuous growth and transformation of the livestock sector offers substantial opportunities for agricultural development, poverty reduction, food security gains and improved human nutrition. The sector can also empower rural women and youth, improve natural resource-use efficiency, and increase the resilience of households to cope with climate shocks. Livestock sector has played an important role in achieving the goal of doubling farmers' income, achieving an agri-exports target of US$ 60 billion by 2022 and further to US$ 100 billion by 2028. The present study attempts to analyses the pattern and composition of livestock exports during 1990-91 to 2021-22 and effect of COVID-19 pandemic on the dairy sector in the world. The share of livestock sector in agriculture and allied sector has been continuously increasing from 17.95% in 1950-51 to 30.13% in 2020-21. Based on secondary data, the study highlights that export of livestock products from India increased from Rs.152 crore in 1990-91 to Rs.30953 crore in 2021-22, with CAGR of 19.92%. Further, share of livestock products exports in total agricultural exports increased from 2.53% to 8.37% and its share in agricultural gross value added also increased from 0.10% in 1990-91 to 1.68% in 2013-14, however, it has decreased to 0.78% in 2021-22. The state-wise analysis of India's export of livestock products revealed that Uttar Pradesh has the highest share with 45.51% followed by Maharashtra (29.00%), Haryana (10.76%), Tamil Nadu (2.71%) and Gujarat (2.15%) during 2021-22. The main drivers of increase in livestock exports in 2021-22 were buffalo meat, dairy products, poultry products, goat and sheep meat and other meat. WTO regime has favourably affected the trade performance of livestock sector, as all livestock products registered higher growth rates post-WTO, compared to the pre-WTO period. The demand for Indian buffalo meat in the international market has sparked a sudden increase in meat exports. Buffalo meat dominated the exports with a contribution of over 79.52% in total livestock products export from India in 2021-22. The main markets for Indian buffalo meat and other livestock products are Vietnam, Malaysia, Egypt, Iraq, Saudi Arabia and USA. The export of livestock products grew more than the agricultural exports in the country. There are five critical challenges that contribute to India's relatively low rank among global agriculture exporters (9th position with 2.2% share in exports and 1.4% share in imports in 2020); low productivity and high logistics costs; limited value addition; export promotion and branding challenges; non-tariff barriers and quality issues. The efficiency at production level needs to be raised in order to make the product price competitive in the international market. India should have an effective and efficient market intelligence system to monitor developments in the world markets (price, subsidy levels, demand and supply) and link import tariffs to world prices. As physical infrastructure and logistics remain main impediments for exports of agricultural products from India, a holistic approach for overall enhancement of export logistics in terms of creating cold chain facilities for transportation and storage to reduce the logistic costs from the present 13-14% to 8% of GDP by 2025, so that our products become competitive in the global markets. Emphasis needs to be given for diversification of livestock exports for more products, particularly value added and processed products and more destinations with improved infrastructure, trained human resources and support facilities to move up the value chain and meet international standards like SPS measures, Agreement on Technical Barriers to Trade, and animal welfare related issues, etc under WTO regulations. As India, at present, provides meagre subsidies to livestock sector, India's commitments to Agreement on Agriculture, will not require change in her current policies. India can negotiate strongly in the next WTO Ministerial meeting with the developed countries to reduce or dismantle their support to the livestock sector to gain access in their markets.

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INTRODUCTION

The continuous growth and transformation of the livestock sector offer substantial opportunities for agricultural development, poverty reduction, food security gains and improved human nutrition. The sector can also empower rural women and youth, improve natural resource-use efficiency, and increase the resilience of households to cope with climate shocks (FAO, 2022). In several countries across the world, the surging demand for livestock products is largely met by large-scale livestock production and associated food chains. Livestock sector contributes to nearly 40 per cent of total agricultural output in developed countries and 20 per cent in developing ones/countries, supporting the livelihoods of at least 1.3 billion people worldwide. Thirty four per cent of global food protein supply comes from livestock. International trade acts as an engine of economic growth. It promotes competition, flow of knowledge, capital and technologies and hence the efficient allocation of scarce resources. With expanding markets, the trade specialisation on a large scale and enhance availability of goods at competitive prices leading to increase real income and consumption.

Dairying and agriculture are bound together by a set of mutual input output relationships. Over the last four decades, there has been rapid growth in livestock production and significant change in how animal products are produced, processed, consumed and marketed. Livestock and livestock products are an important source of food, nutrition and livelihood security in Asia and the Pacific where production of animal-based foods has grown dramatically over the past two and half decades. Rising income and dietary diversification has led to increase in the production and consumption of animal-origin food in India. Milk, meat and egg consumption have grown rapidly in India over the past 30 years. During 2020-21, the per capita availability of milk, meat and egg was 427 gram per day, 6.52 kg and 90 per annum, respectively. Dairying is not an adjunct to the crop-mix of Indian farms but an integral part of the total farming system. Hence, treating dairy cattle as the backbone of the livestock wealth of our country would not be an exaggeration. India accounts for about 12.80 per cent of cattle, 54.38 per cent buffalo, and 13.42 per cent goats in the total world population, and for about 20.75 per cent of the world's total milk production (GoI, 2021). In 2020-21, livestock generated outputs worth Rs.617117 crore (at 2011-12 prices) which comprised 4.55 per cent of the total GDP and 30.13 per cent of the agricultural GDP/GVA. The total output worth was higher than the value of foodgrains. The major thrust of livestock development strategy in India has been on achieving self-sufficiency in livestock products through import substitution.India's international trade in livestock and livestock products is mainly in live animals (17%), meat and meat products (82%), dairy products and eggs (<0.17%). The India's share in milk, buffalo meat, goat meat, sheep meat, eggs, chicken meat and natural honey was 20.75 per cent, 38.40 per cent, 9.04 per cent, 2.84 per cent, 6.77 per cent, 2.99 per cent and 3.83 per cent, respectively in the world production (FAO, 2021). Meat and meat products have dominated the exports from livestock (3.58%).

Our livestock are roughly half as efficient as the average milch animals in the world and probably only one fifth as efficient as those in the advanced countries. However, there is consistent rise in India's share in world milk production, which has grown from 9.9 per cent in 1990 to 12.3 per cent in 1996 and further to 20.75 per cent in 2020. Although India has huge livestock population, in terms of trade it stands insignificant

in the world trade of livestock products. However, it is to be noted that India has tremendous potential to produce and export various livestock products. Despite constraints like rearing of livestock under sub optimal conditions due to low economic status of livestock owners, India has now become the largest producer of milk in the world. The development of Indian dairy sector is an unprecedented success story as it is based on millions of small producers. Government of India is making concerted efforts to raise the per capita availability of milk through increase in productivity of milch animals. In order to achieve this ambitious goal, assistance is being provided to the State Governments for controlling animal diseases, scientific management and upgradation of genetic resources, increasing availability of nutritious feeds and fodder, etc. In the present situation, when production of dairy products to match international standards has become necessary to compete in international market of milk and milk products, steps need to be initiated to improve quality of Indian milk products with a view to boost export trade of these products in free trade regime and earn valuable foreign exchange as well as provide clean and quality milk to domestic population for their better health market coupled with marketing opportunities abroad due to the GATT provisions now render India to an enviable position to cater to the huge global market of livestock products, particularly dairy products. The emergence of India as an exporting nation of livestock products in the era of globalisation is sure to upset the traditionally exporting block of nations in these products. The keeping this in view the main objective of the paper is to access the composition and pattern in export of livestock products from India in the context of world trade organisation (WTO) and effect of the COVID-19 pandemic on the dairy sector in the world.

DATA AND METHODOLOGY

The data used in this paper was collected from various secondary sources issues of the annual publication of Food and Agriculture Organisation (FAO), Production Yearbook, Trade Yearbook, International Trade Statistics Yearbook, Export Import Data Bank, Agricultural and Processed Food Products Export Development Authority (APEDA), DGCIS, Annual Reports from Department of Animal Husbandry, Dairying & Fisheries, Ministry of Agriculture & Farmers Welfare, GoI, Basic Animal Husbandry Statistics from Department of Animal Husbandry and Dairying, Ministry of Agriculture and Farmers Welfare, GoI, National Dairy Development Board (NDDB), NABARD Annual Reports, National Statistical Office, Ministry of Statistics and Programme Implementation (MoSPI), GoI, Year-wise data on agricultural exports and imports were extracted from Agricultural Statistics at a Glance 2021, Publication of Directorate of Economics and Statistics, Ministry of Agriculture and Farmers Welfare, Government of India, COMTRADE, United Nations (2021), Dairy India 2017 and from published research papers, etc. The data were compiled and analysed with simple tabular techniques, graphs, Compound Annual Growth Rate (CAGR) and Coefficient of Variation (CV).

RESULTS AND DISCUSSION

Livestock Population in India

The population of cattle in the country have increased from 155.3 million in 1951 to 193.46 million during 2019. Similarly, the buffalo population in the country has increased from 43.4 million in 1951 to 109.8 million in 2019. The sheep and goat

population has increased upto 2007 and a considerable slowing down was noticed in 2012 then increased in 2019. The total livestock population in the country was 536.76 million in 2019, has increase about 4.82 per cent over the previous census (2012) was recorded. The total cattle, buffalo, sheep, goat, pigs, camels, mithuns and yaks, horses and ponies and mules and donkeys contributes nearly 36.04 per cent, 20.47 per cent, 13.83 per cent, 27.74 per cent, 1.69 per cent, 0.05 per cent, 0.08 per cent, 0.06 per cent and 0.04 per cent, respectively of the total livestock population as per 2019 census. In case of poultry population, it increase about 16.81 per cent over the previous census (2012). Another important feature of the livestock census 2019 is that camel, pig, yak, horses and ponies and donkey population decreased by about 37.50 per cent, 11.95 per cent, 25.00 per cent, 45.16 per cent and 62.50 per cent over 2012 census (Table 1). They provide milk, meat, draft power, hides and skin, manure and other valuable by product thereby significantly contributing to sustainable human nutrition and economy of the nation. Although, India stands at number one in milk production in the world whereas the meat production is a miserably lower compared to other developing countries. Country has abundant export opportunities of livestock products since it has huge livestock and poultry population/resources.

Table 1: Change in Livestock Population by Species-Change over Previous Census (%)

Species	1951-56	1956-61	1961-66	1966-1972	1972-1977	1977-82	1982-87	1987-92	1992-97	1997-2003	2003-07	2007-12	2012-19
Cattle	2.19	10.65	0.34	1.19	0.95	6.94	3.74	2.45	-2.79	-6.89	7.51	-4.12	1.34
Adult Female Cattle	-13.05	7.82	1.57	3.09	2.25	8.42	4.90	3.70	0.00	0.16	13.18	5.07	9.81
Buffalo	3.46	14.03	3.52	8.30	8.01	12.58	8.88	10.79	6.77	8.90	7.56	3.23	1.06
Adult Female Buffalo	3.33	11.98	4.53	12.60	9.44	3.83	20.31	12.02	6.85	8.97	6.86	3.85	4.34
Total Bovines	**2.47**	**11.39**	**1.06**	**2.84**	**2.67**	**8.35**	**5.15**	**4.75**	**0.00**	**-1.97**	**7.52**	**-1.58**	**1.29**
Sheep	0.51	2.29	5.47	-5.66	2.50	19.02	-6.35	11.16	13.19	6.96	16.42	-9.08	14.12
Goat	17.37	9.93	6.08	4.49	12.00	26.06	15.63	4.63	6.42	1.39	12.94	-3.77	10.15
Horses and Ponies	0.00	-13.33	-15.38	-18.18	0.00	0.00	-11.11	0.00	0.00	0.00	-25.00	0.00	-45.16
Camels	33.33	12.50	11.11	10.00	0.00	0.00	-9.09	0.00	-10.0	-33.3	-16.6	-20.00	-37.50
Pigs	11.36	6.12	-3.85	38.00	10.14	32.89	4.95	20.75	3.91	1.50	-17.7	-7.21	-11.95
Mules	-100.00		0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	-50.0	100.00	-60.00
Donkeys	-15.38	0.00	0.00	-9.09	0.00	0.00	0.00	0.00	-10.0	-22.2	-42.8	-25.00	-62.50
Yak									0.00	0.00	0.00	0.00	-25.00
Mithun									0.00	50.00	0.00	0.00	-26.67
Total Livestock	**4.68**	**9.75**	**2.38**	**2.53**	**4.59**	**13.59**	**6.10**	**5.77**	**3.08**	**-0.08**	**9.22**	**-3.32**	**4.82**
Poultry	**28.98**	**20.46**	**1.05**	**20.02**	**14.95**	**30.46**	**32.55**	**11.55**	**13.19**	**40.68**	**32.68**	**12.39**	**16.81**

Source: Livestock Census, DAH&D, GoI.

Livestock Sector and Agricultural Growth

The agricultural sector, which used to dominate the Indian Economy, its share in the country's GVA shrunk from 61.92 per cent in 1950-51 to 16.27 per cent in 2020-21 (Table 2). During this period, the share of livestock sector in the agricultural GVA increased from 17.95 per cent in 1950-51 to 30.13 per cent in 2020-21. It may also be observed from the table that in the pre-WTO period (1950-51 to 1994-95), livestock sector grew at CAGR of 2.47 per cent as compared to post-WTO period (1994-95 to 2020-21), when it grew by 5.11 per cent. It may be concluded that livestock sector is

playing a very significant role in the overall economic growth. The government of India has accorded a top priority to the development of livestock sector in its efforts towards achieving the goal of doubling farmers' income by 2022-23 and achieving target of agricultural exports to US$ 60+ billion by 2022 and reaching US$ 100 billion in the next few years thereafter, with a stable trade policy regime (India's Agriculture Export Policy, 2018).

Table 2: CAGR and Share of Agriculture and Allied Sectors

(In %)

Particular	Total GVA	Agriculture, forestry and fishing	Crops	Livestock	Forestry and logging	Fishing and aquaculture
1950-51 to 1959-60	3.68	2.71	2.93	2.91	0.29	5.79
1960-61 to 1969-70	3.29	1.51	1.27	1.25	3.33	4.00
1970-71 to 1979-80	3.45	1.74	1.94	1.88	-0.62	2.90
1980-81 to 1989-90	5.17	2.97	3.09	3.11	-0.26	5.67
1990-91 to 1999-00	6.14	3.34	3.36	3.40	0.95	5.36
2000-01 to 2009-10	6.86	2.56	2.52	4.16	-0.42	3.62
2010-11 to 2020-20	5.92	3.64	1.65	7.53	3.37	8.56
1950-51 to 2020-21	4.91	2.72	2.69	3.16	0.65	4.51
1950-51 to 1994-95 (Pre-WTO Regime)	***3.92***	***2.42***	***2.51***	***2.47***	***0.74***	***4.05***
1995-96 to 2020-21 (Post-WTO Regime)	***6.41***	***3.07***	***2.52***	***5.11***	***0.88***	***5.09***
Share (%)						
1950-51		61.72	62.29	17.95	30.64	1.66
1959-60		56.87	63.58	18.28	24.65	2.09
1969-70		48.60	63.15	18.12	25.56	2.46
1979-80		40.31	63.66	18.17	22.50	2.97
1989-90		35.55	65.09	18.51	15.28	3.29
1999-00		27.58	65.33	18.64	12.14	3.95
2009-10		18.19	63.36	21.87	10.04	4.72
2020-21		16.27	55.06	30.13	8.09	6.72

Source: Calculated by Author using National Statistical Office Data, MoSPI, GoI.

Share of Livestock Sector in Agriculture Gross Value Added

The livestock sector is of critical importance for the sustainability of agriculture growth. The share of livestock in agriculture and allied sector in the Gross Value Added (GVA) is estimated to be growing steadily from 21.79 per cent in 2011-12 to 30.13 per cent in 2020-21 at constant prices. The compound annual growth rate (CAGR) of livestock GVA is 7.63 per cent is much higher than that for agriculture and allied sector (3.64%) (Table 3). This is a clearly indication of growing importance of livestock sector in the overall agricultural development in the country. Agriculture diversification through animal husbandry is one of the primary driver of growth in rural income and higher public investment in livestock sector is need of the hour for doubling farmers' income and achieving an agri-exports target of US$ 100 billion within by 2028.

Table 3: Gross Value Added by Economic Activity
(at Constant (2011-12) Prices)

(Rs. in crore)

Year	Total GVA at Basic Prices	Agriculture, forestry and fishing	Share of agriculture, forestry and fishing in total GVA (%)	Livestock	Share of livestock in GVA of agriculture& allied activities (%)
2011-12	8106946	1501947	18.53	327334	21.79
2012-13	8546275	1524288	17.84	344375	22.59
2013-14	9063649	1609198	17.75	363558	22.59
2014-15	9712133	1605715	16.53	390449	24.32
2015-16	10491870	1616146	15.40	419637	25.97
2016-17	11328285	1726004	15.24	461572	26.74
2017-18	12034171	1840023	15.29	497830	27.06
2018-19	12744203	1887145	14.81	539945	28.61
2019-20	13271471	1968571	14.83	577720	29.35
2020-21	12585074	2048032	16.27	617117	30.13
2021-22	13605474	2109697	15.51		
CAGR (%)	**5.57**	**3.64**		**7.63**	

Source: National Statistics Office, 2021, and Press Note on Provisional Estimates of Annual National Income, 2021-22 *Released on 31 May 2022, MoSPI, GoI.*

Value Addition

The development of animal husbandry and dairying over time has resulted in significant expansion in value of livestock products in relation to value of agricultural products produced in India. The estimates relating to output and value added from livestock sector for period 2011-12 and 2020-21 is given in Table 4. At constant prices, the value of livestock products produced in the country in 2020-21 was estimated at Rs.798726 crore with milk and milk products accounting for 66.77 per cent share in this value. It is to be noted that the value of livestock products produced in the country has been gradually growing over the past four decades. The share of meat in the total value of livestock output is the second highest after milk (23.13%). The value of meat output is continuously increasing at the CAGR of 8.17 per cent followed by eggs (5.98%) and milk (5.84%) and the value of output from livestock sector grew by 5.84 per cent during 2011-12 to 2020-21.Although India has huge livestock population, in terms of trade it stands insignificant in the world trade of livestock products. However, considering availability of surplus of livestock products, the emergence of India as an exporting nation of animal products in the coming era is sure to upset the traditionally exporting block of nations in these products. It is widely believed that with the ushering in of the agricultural policy reforms in major developed countries, the demand for animal/livestock products from developing countries, like India, will get a real boost. The adoption of several liberal policy measures by the Government in more recent times and the application of scientific and modern production techniques have boosted India's livestock production. However, the point that merits consideration is how did the structure of livestock products trade of India change over time and what future prospects India holds in the export trade of livestock products in the light of the swiftly changing world market conditions, food habits and also in view of the various

trade policy measures adopted by the various developed and developing countries (Kumar, 2018).

Table 4: Output & Value Added from Livestock Sector

(at Constant 2011-12 Prices) (Rs. in crore)

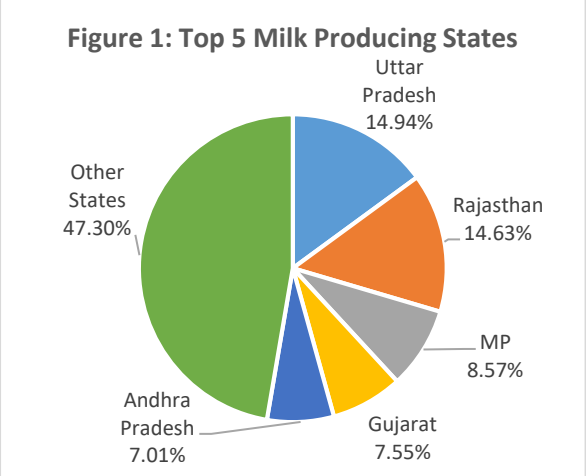
Particular	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	CAGR (%)
Value of output from livestock sector	**487751**	**508074**	**530953**	**562026**	**595242**	**641217**	**671244**	**717125**	**760025**	**798726**	5.84
Milk group	*327767*	*339240*	*352247*	*374267*	*396662*	*421747*	*449213*	*478598*	*505274*	*533300*	*5.81*
Meat group	96219	102623	110744	117264	125631	143944	152032	164494	176893	184749	7.92
Meat	88469	94428	102444	108543	116698	134362	142251	154070	165717	172966	8.17
Beef	11754	12997	13243	15255	16886	16266	16419	17280	17642	17643	4.53
Mutton	32667	34585	34905	35693	35857	40505	42351	45888	50611	54761	5.81
Pork	4465	4376	4615	4475	3889	4526	3985	4070	4185	3790	-1.57
Poultry meat	39583	42470	49681	53120	60066	73064	79496	86833	93279	96772	11.36
Meat products	3346	3551	3597	3764	3814	4192	4325	4659	5069	5401	5.35
By-products	4404	4644	4703	4957	5119	5390	5456	5765	6107	6383	4.09
Hides	1887	1981	2012	2158	2282	2271	2198	2255	2282	2289	2.05
Skins	1189	1249	1259	1290	1296	1437	1517	1632	1782	1917	5.40
Other by-products	1328	1415	1432	1509	1541	1682	1741	1878	2042	2177	5.54
Eggs	16,633	17364	18308	19080	19829	20332	21901	23702	26628	28525	5.98
Wool & hair	496	508	522	518	464	477	445	440	418	414	-2.57
Wool	352	363	376	378	333	331	314	306	279	287	-3.15
Hair & bristles	144	145	146	140	131	147	130	134	138	127	-1.19
Dung	32599	33468	33311	34177	34870	35515	33939	34540	34826	35132	0.69
Dung fuel	11280	11399	11594	11880	12077	12029	11197	11469	11508	11624	0.06
Dung manure	21318	22069	21717	22296	22793	23486	22742	23071	23318	23507	1.01
Silk worm cocoons & honey	4326	4,507	4,718	4768	4830	4996	5273	6365	6498	6577	5.07
Increment in livestock	9710	10,364	11,102	11952	12958	14205	8441	8987	9488	10029	-1.41

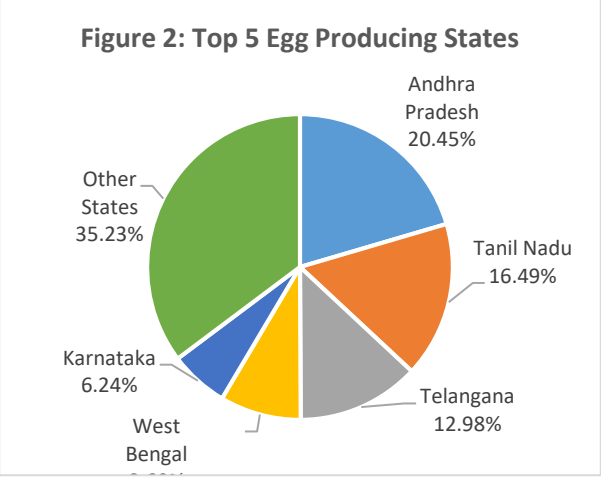
Source: National Accounts Statistics 2022, MoSPI, GoI.

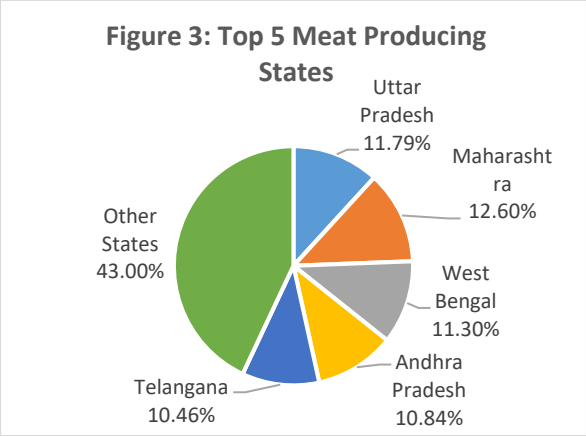
State-wise Livestock Output

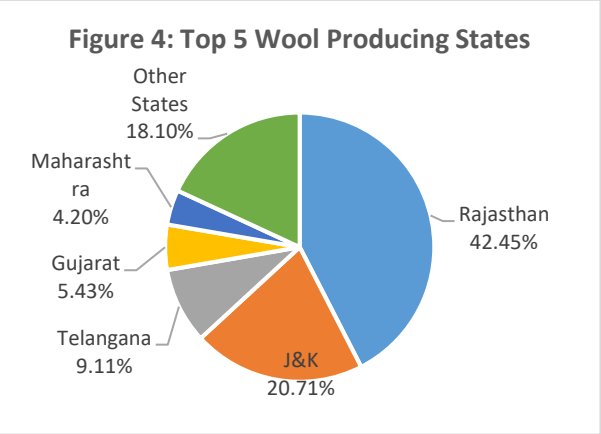
The top five milk producing states are Uttar Pradesh (14.94%), Rajasthan (14.63%), Madhya Pradesh (8.57%), Gujarat (7.55%) and Andhra Pradesh (7.01%). They together contributes about 52.70 per cent of total milk production in the country during 2020-21 (Figure 1).The top five egg producing states are Andhra Pradesh (20.45%), Tamil Nadu (16.49%), Telangana (12.98%), West Bengal (8.60%) and Karnataka (6.24%). They together contributes 64.77 per cent of total egg production in the country during 2020-21(Figure 2).The top five meat producing states are Maharashtra (12.60%), Uttar Pradesh (11.79%), West Bengal (11.30%), Andhra Pradesh (10.84%) and Telangana (10.46%). They together contributes about 57 per cent of total meat production in the country during 2020-21 (Figure 3). Further, nearly 51 per cent of meat production is contributed by Poultry. Buffalo, Goat, Sheep, Pig and Cattle contributes about 18 per cent, 14 per cent, 10 per cent, 4 per cent and 3 per cent of

meat production, respectively to the total meat production of the country. The top five wool producing states are Rajasthan (42.45%), J&K (20.71%), Telangana (9.11%), Gujarat (5.43%) and Maharashtra (4.20%). They together contributes 81.90 per cent of total wool production in the country (Figure 4).









State-wise Value of Output from Livestock

The state-wise value of output from livestock is given in Table 5. It may be seen that Uttar Pradesh, Rajasthan, Tamil Nadu, Andhra Pradesh and Maharashtra together accounted for 48.84 per cent of value of output of livestock sub-sector at constant prices during 2019-20. The output of Tamil Nadu has increased at a faster rate followed by Madhya Pradesh, Andhra Pradesh and Rajasthan during this period. However, change in share of output of Uttar Pradesh has decreased faster during the same period. Further, the value of output was grew more than the growth at the national level in as many as 9 states, including Mizoram and Tripura.

Table 5: State-wise Value of Output from Livestock at Constant Prices (2011-12)

(Rs. in crore)

State/ UT	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	CAGR (%)
Andhra Pradesh	34124	35868	36442	38034	43192	48984	53948	58081	60895	8.33
Arunachal Pradesh	614	562	639	676	702	747	784	814	853	5.01
Assam	5173	5412	5428	5614	5785	5966	5932	6006	6226	2.18
Bihar	22098	22944	24606	26340	27653	29332	30042	32209	35679	5.90
Chhattisgarh	4910	5119	5311	5404	5565	5996	6192	6530	6898	4.26
Goa	292	279	302	251	220	208	235	236	249	-3.02
Gujarat	31109	32429	34658	36425	37917	39419	40054	42363	44430	4.42
Haryana	24225	25421	26677	28164	29844	31856	34208	37168	40379	6.55
Himachal Pradesh	3217	3269	3302	3361	3619	3746	3871	4083	4267	3.78
Jammu & Kashmir	5857	5829	5844	6350	6985	7355	7486	7722	7626	4.33
Jharkhand	7758	7485	7648	7851	8082	8474	8942	10168	10881	4.53
Karnataka	18936	19623	20199	21031	21740	22518	23624	26276	30382	5.39
Kerala	12987	14050	13802	14245	14259	13639	13989	13738	13587	0.16
Madhya Pradesh	21612	23241	25136	28064	31343	34514	37898	40753	43727	9.66
Maharashtra	37617	38743	39185	40042	42124	46212	49641	52257	53688	5.02
Manipur	708	721	730	729	718	732	756	763	793	1.16
Meghalaya	613	630	665	683	694	722	735	755	739	2.61
Mizoram	369	362	376	409	451	784	801	831	937	14.99
Nagaland	1024	952	931	924	599	580	541	528	517	-9.59
Odisha	9523	9584	10063	9806	9884	10218	10655	11597	11825	2.69
Punjab	26660	27416	28555	29247	30454	31924	33637	35455	37313	4.31
Rajasthan	51735	53741	56443	63723	68699	75906	78125	82085	88612	7.34
Sikkim	140	137	153	159	193	190	158	162	205	3.87
Tamil Nadu	33214	35352	40627	45342	49998	60606	64514	69593	72931	11.24
Telangana	23977	25660	26333	28246	29887	31684	33794	38740	42061	7.07
Tripura	697	759	872	941	915	1011	1019	1215	1295	7.38
Uttar Pradesh	72542	75603	78763	82543	85488	88350	87125	91659	95076	3.27
Uttarakhand	4098	4314	4509	4587	4825	4936	4994	5156	5229	3.02
West Bengal	28875	30106	30353	30506	31089	32229	35076	37566	40153	3.95
UTs	*3047*	*2461*	*2398*	*2329*	*2317*	*2380*	*2467*	*2616*	*2574*	*-0.68*
All India	**487751**	**508074**	**530953**	**562026**	**595242**	**641217**	**671244**	**717125**	**760025**	**5.85**

Source: National Statistical Office, MoSPI, GoI, 2022.

Trends in Exports of Agricultural Products

Table 6 give the trends in India's exports and imports of agricultural commodities including livestock products for the period 1990-91 to 2021-22. India has consistently maintained a trade surplus in agricultural commodities over the years. India's agri-exports increased from Rs.6013 crore in 1990-91 to Rs.369826 crore in 2021-22, grew at a CAGR of 13.85 per cent during the period, although in 2019-20, there was a slight drop in agri-exports by 8.5 per cent. The livestock exports also increased from Rs.152 crore in 1990-91 to Rs.30953 crore in 2021-22, registered a much high growth (19.92%) as compared to exports of agricultural commodities (13.85%). During 2021-

22, India's livestock products exports surged and reached the highest so far which was possible due to the hard work put in by our farmers and a slew of measures/schemes initiated by the Government of India and institutions including Farmers Producer Organisations (FPOs). Likewise, the import of agricultural products has also increased from Rs.1206 crore in 1990-91 to Rs.237913 crore in 2021-22, grew at a CAGR of 16.72 per cent.

The share of livestock exports to agricultural GVA increased from 0.10 per cent in 1990-91 to reach peak 1.68 per cent in 2013-14 then decrease to 0.78 per cent in 2021-22. During this period, the share of export of livestock products in total agri-exports has also increased from 2.53 per cent in 1990-91 to 13.99 per cent in 2015-16. Thereafter, it slipped from this peak and stood at 8.37 per cent in 2021.22. India has thus showed an impressive growth trajectory from food deficit country to a food sufficient and to a food surplus one now. All revolutions in agricultural production triggered by innovations, incentives and institutions have successfully made India net exporter of agricultural produce (Vinod, 2021). India's net agri-export surplus increased to Rs.131913 crore in 2021-22 from only Rs.4807 crore in 1990-91. Comparison of exports of livestock products by value during first half (April-September) of 2022-23 shows that the exports during April to September 2022 were Rs.16446 crore as compared to Rs.14059 crore during same period in 2021-22, indicating an increase of 16.97 per cent. During April – September 2022, increase in exports of poultry products (94.65%), dairy products (67.68%), processed meat (36.43%), and sheep and goat meat (22.22%) in comparison to the same period during 2021. The share of buffalo meat was 6.19 per cent in total agricultural exports. During last two decades, APEDA was more focussed on export promotion of meat. It may be concluded that despite COVID-19 pandemic, the exports in the livestock sector were performed remarkably well.

Table 6: India's Imports and Exports of Principal Agricultural Commodities

(Rs. in crore)

Year	Agricultural Imports	Agricultural Exports	Livestock Products Exports	Net Agri Export Surplus (Agri-exports-agri-imports)	Agriculture GVA at Current Prices	Share of Agri-import in agri-GVA (%)	Share of Agri-export in agri-GVA (%)	Share of Livestock products export in agri-exports (%)	Share of Livestock products export in agri-GVA (%)
1990-91	1206	6013	152	4807	154953	0.78	3.88	2.53	0.10
1991-92	1478	7838	251	6360	181017	0.82	4.33	3.20	0.14
1992-93	2876	9040	327	6164	203009	1.42	4.45	3.62	0.16
1993-94	2327	12587	374	10259	235483	0.99	5.35	2.97	0.16
1994-95	5937	13223	448	7286	271162	2.19	4.88	3.39	0.17
1995-96	5890	20398	683	14508	294848	2.00	6.92	3.35	0.23
1996-97	6613	24161	804	17549	354521	1.87	6.82	3.33	0.23
1997-98	8784	24832	908	16048	376207	2.33	6.60	3.66	0.24
1998-99	14566	25511	852	10944	432065	3.37	5.90	3.34	0.20
1999-00	16067	25314	901	9247	457081	3.52	5.54	3.56	0.20
2000-01	12086	28657	1631	16571	462407	2.61	6.20	5.69	0.35
2001-02	16257	29729	1497	13472	500567	3.25	5.94	5.04	0.30
2002-03	17609	34654	1668	17045	486974	3.62	7.12	4.81	0.34
2003-04	21973	36415	2025	14443	546794	4.02	6.66	5.56	0.37
2004-05	22812	41603	2593	18791	567635	4.02	7.33	6.23	0.46
2005-06	15978	45711	3851	29733	639988	2.50	7.14	8.42	0.60
2006-07	23000	57768	4119	34768	715179	3.22	8.08	7.13	0.58
2007-08	22550	74673	5129	52124	820532	2.75	9.10	6.87	0.63
2008-09	28719	81065	7266	52345	925878	3.10	8.76	8.96	0.78
2009-10	54365	84444	7457	30079	1066008	5.10	7.92	8.83	0.70

2010-11	51074	113047	10499	61973	1299884	3.93	8.70	9.29	0.81
2011-12	70165	182801	15188	112636	1501947	4.67	12.17	8.31	1.01
2012-13	95719	227193	20778	131474	1675107	5.71	13.56	9.15	1.24
2013-14	85727	262779	32289	177051	1926372	4.45	13.64	12.29	**1.68**
2014-15	121319	239681	33128	118362	2093612	5.79	11.45	13.82	1.58
2015-16	140289	215396	30141	75107	2227533	6.30	9.67	13.99	1.35
2016-17	164727	226652	29369	61925	2518662	6.54	9.00	12.96	1.17
2017-18	152095	251564	29814	99469	2829826	5.37	8.89	11.85	1.05
2018-19	137019	274571	30633	137552	3029925	4.52	9.06	11.16	1.01
2019-20	147446	252976	26384	105530	3358364	4.39	7.53	10.43	0.79
2020-21	157887	305942	27156	148055	3609494	4.37	8.48	8.88	0.75
2021-22	237913	369826	30953	131913	3980067	5.98	9.29	8.37	0.78
2022-23*	148865	207227	16446						
CAGR	**16.72**	**13.85**	**19.92**		**10.82**				

Source: Compiled by authors' from Directorate of Economics and Statistics, APEDA and CMIE.
Note: CAGR was calculated for the period 1990-91 to 2021-22. (*) April-September 2022.

State-wise Exports of Livestock Products

State-wise exports of livestock products monitored by APEDA are presented in Table 7. It is clear from the table that Uttar Pradesh has exported the highest livestock products in value term with a worth of Rs.14087.68 crore in 2021-22 followed by Maharashtra (Rs.8976.68 crore), Haryana (Rs.3331.96 crore), Tamil Nadu (Rs.839.09 crore) and Gujarat (Rs.664.03 crore). These five states, together, accounted for 90.13 per cent of the total exports of livestock products under APEDA.

Table 7: State-wise Exports of Livestock Products

(Rs. in crore)

State	Uttar Pradesh	Maharashtra	Haryana	Tamil Nadu	Gujarat	Other States	Total
2008-09	37.94	5386.02	298.58	561.39	108.65	873.63	7266.21
2009-10	46.80	5262.26	1092.33	457.62	85.72	512.24	7456.97
2010-11	2267.32	6333.13	709.59	406.12	73.50	709.69	10499.35
2011-12	4032.66	9122.33	995.94	476.06	66.35	494.90	15188.24
2012-13	6387.47	10043.35	2070.92	763.26	100.15	1413.06	20778.21
2013-14	11570.07	14439.05	2463.27	1071.73	472.70	2271.74	32288.56
2014-15	12509.21	14672.78	2894.58	864.18	182.85	2004.70	33128.30
2015-16	11706.89	11401.70	2524.06	2173.23	154.39	2180.78	30141.05
2016-17	10157.59	11875.20	3441.26	1681.62	171.04	2042.58	29369.29
2017-18	13260.73	8920.04	3553.25	1587.40	196.61	2295.65	29813.68
2018-19	13619.55	8306.73	3162.97	2157.77	371.77	3014.19	30632.98
2019-20	12182.19	7660.15	2530.24	1655.80	256.76	2098.84	26383.98
2020-21	13527.61	7222.72	2909.74	1111.59	198.84	2185.07	27155.57
2021-22	14087.68	8976.68	3331.96	839.09	664.03	3053.86	30953.30
CAGR (%)	**44.06**	**2.17**	**15.42**	**10.19**	**13.16**	**13.30**	**11.05**
Share in 2021-22 (%)	**45.51**	**29.00**	**10.76**	**2.71**	**2.15**	**9.87**	100

Source: Computed using data from www.apeda.gov.in

Trends in Export of Livestock Products from India

Although India has huge livestock population, with regards to terms of trade (ToT) it stands insignificant in the world trade of livestock products. However, considering availability of surplus of livestock products, the emergence of India as an exporting nation of animal products in the coming era is sure to upset the traditionally exporting block of nations in these products. It is also widely believed that with the ushering in of the agricultural policy reforms in major developed countries, the demand for animal/livestock products from developing countries, like India, will get a real boost. The adoption of several liberal policy measures by the Government in more recent times and the application of scientific and modern production techniques have boosted India's livestock production. However, the point that merits consideration is how did the structure of livestock products trade of India changed over time and what future prospects India holds in the export trade of livestock products in the light of the swiftly changing world market conditions, food habits and also in view of the launch of global trade policy reforms and trade integration with the establishment of WTO.

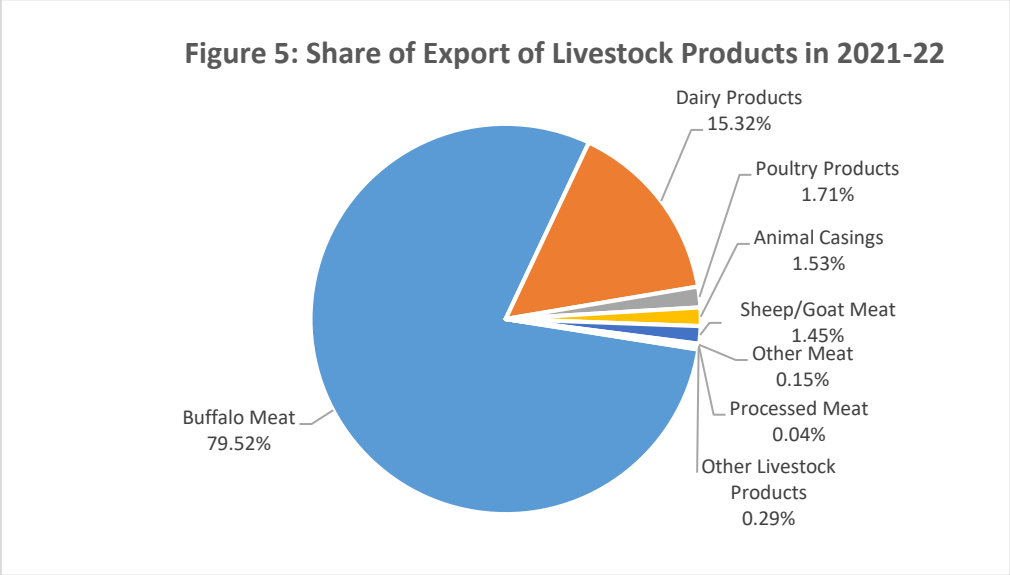
The trends in export of livestock products include Buffalo meat, Sheep/Goat meat, Poultry products, Animal casings, Processed meat, Dairy products, Other livestock products, etc and estimated compound annual growth rate (CAGR) and Coefficient of Variation (CV) is presented in Table 8 and Figures 5 and 6. The table clearly indicate that there has been significant growth in animal products in terms of value. Animal products should be one of the key focus area for increasing export revenue from the country. The volatility of export market of any commodity discourages investment in production of that commodity, alters the planning horizon and destroys the sense of security, which is necessary for any concrete measure. The instability indices indicates that proper policy on export and investment planning can be formulated (Kumar, 2019). India's export of livestock products grew by 9.42 per cent from Rs.7457 crore in 2009-10 to Rs.30,953 crore during 2021-22, which include the major products like Buffalo meat (Rs.24612.74 crore), Dairy products (Rs.4742.76 crore), Poultry products (Rs.529.80 crore), Sheep/Goat meat (Rs.448.07 crore), Animal casings (Rs.474.04 crore), Other meat (Rs.45.50 crore), Processed meat (Rs.11.54 crore), etc.

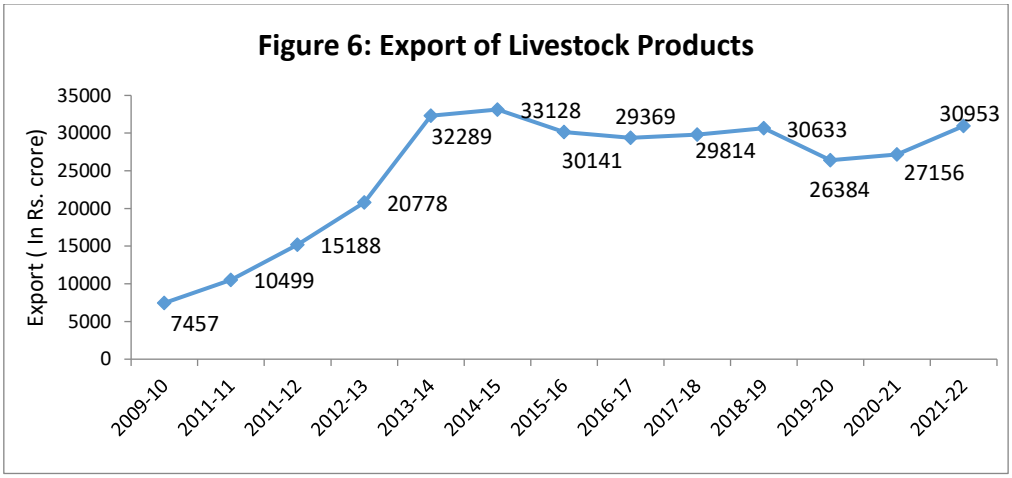
Table 8: India Export of Livestock Products

(Rs. in crore)

Year/ Product	Buffalo Meat	Dairy Products	Poultry Products	Animal Casings	Sheep/Goat Meat	Other Meat	Processed Meat	Other Livestock Products	Total
2009-10	5481.43	796.99	372.53	32.82	745.94	10.75	8.79	7.72	7456.97
2011-11	8613.31	1216.76	314.33	33.24	258.83	9.51	13.96	39.41	10499.35
2011-12	13741.11	647.79	458.05	33.98	252.83	3.67	9.50	41.31	15188.24
2012-13	17408.99	2324.68	494.93	21.46	426.47	2.33	9.37	89.98	20778.21
2013-14	26457.82	4407.78	566.80	28.46	694.12	3.40	7.68	122.50	32288.56
2014-15	29282.58	2161.68	651.20	19.33	828.11	2.48	14.20	168.72	33128.30
2015-16	26681.55	1681.51	766.71	17.02	837.76	0.01	6.19	150.31	30141.05
2016-17	26303.16	1711.64	530.29	13.84	875.86	0.91	4.58	70.99	29369.29
2017-18	25988.45	1954.33	551.85	327.44	863.97	16.44	9.91	101.29	29813.68
2018-19	25091.43	3375.55	687.30	480.66	867.53	13.73	13.92	102.86	30632.98
2019-20	22661.12	1982.34	574.58	398.50	654.05	16.57	15.25	81.57	26383.98
2020-21	23459.89	2382.93	435.52	416.54	330.45	18.07	12.65	99.52	27155.57
2021-22	24612.74	4742.76	529.80	474.04	448.07	45.50	11.54	88.85	30953.30
CAGR (%)	**9.78**	**10.27**	**3.00**	**33.36**	**2.55**	**14.96**	**2.00**	**12.33**	**9.42**
CV (%)	35.52	55.20	23.33	114.90	39.27	110.82	31.43	49.28	34.65

Source: Computations based on data from www.apeda.gov.in





Item-wise Major Destinations of Livestock Products from India

1. Buffalo Meat

India is having largest livestock population including Buffaloes, Sheep & Goats, Pigs and Poultry, which are generally used for production of meat products. India has about 3600 slaughterhouses; there are live modern abattoirs and one integrated abattoir meat processing plant for slaughtering buffaloes for exports and domestic consumption. There are 24 meat processing plants including 13 hundred per cent export oriented units who are mainly engaged in export of meat products. In the last one-year, three new export oriented units of buffalo meat processing have been approved and are reportedly under implementation. In addition, there are few animal casing units engaged in collecting cleaning, grading and exporting sheep and goat and cattle guts. The main products exported are carcasses of bovine animals (fresh and frozen), meat of bovine animals with bone (fresh and frozen), and boneless meat of bovine animals (fresh and frozen).

India accounts for about 38.4 per cent of the world buffalo meat production, with Uttar Pradesh producing the largest, followed by Andhra Pradesh, Maharashtra and Punjab. India has exported 1175193 MT of buffalo meat products to the world for the worth of

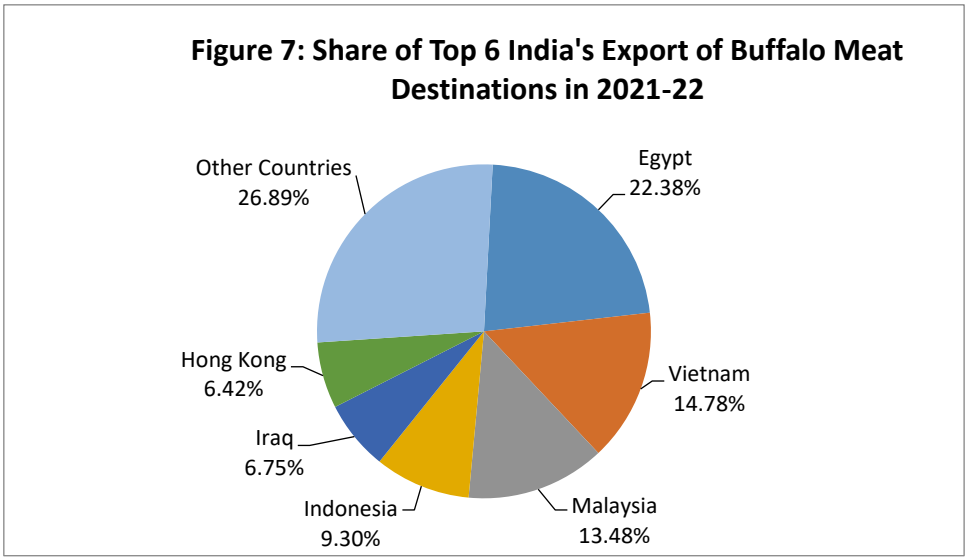
Rs.24612.74 crore during 2021-22. The major export destinations was Egypt, Vietnam, Malaysia, Indonesia, Iraq and Hong Kong. These six countries, together, accounts for 73.11 per cent of the total buffalo meats export during 2021-22 (Table 9 and Figure 7).

Table 9: Country-wise Export of Buffalo Meat from India

(Rs. in crore)

Country	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Egypt	1143.16	1255.71	2033.3	2574.03	2325.58	2027.2	1645.61	821.35	2364.89	2785.39	5508.52
Vietnam	4047.42	5125.3	10971.58	13200.59	13122.82	13675.64	14728.88	11850.76	7563.07	2996.77	3636.76
Malaysia	1404.13	1943.71	2356.42	2586.03	2682.89	2385.81	2388.89	2574.34	2682.48	2835.06	3317.63
Indonesia	0	13.21	0	1	15.43	1544.17	618.4	2266.99	1651.97	2270	2288.33
Iraq	284.11	352.99	526.77	406.16	766.63	860.72	1005.66	1192.79	1207.86	1102.94	1662.59
Hong Kong	25.48	135.25	31.96	9.76	75.17	33.29	234.82	12.52	857.26	6368.82	1579.48
Other Countries	13741.14	17408.96	26457.79	29282.6	26681.57	26303.13	25988.5	25091.45	22661.13	23459.9	24612.74
Total	**13741.14**	**17408.96**	**26457.79**	**29282.60**	**26681.57**	**26303.13**	**25988.50**	**25091.45**	**22661.13**	**23459.90**	**24612.74**

Source: APEDA.



2. Goat and Sheep Meats

Goats - Sheep constitute a very important species of livestock in India, mainly because of their short generation intervals, higher rates of prolificacy, and the ease with which the goats as also their products can be marketed. They are considered very important for their contribution to the development of rural zones and people. The local initiatives to promote quality labels and innovative products for cheeses, meat and fibres could help goats in keeping a role for sustainable development in an eco-friendly environment all over the world. However, the future of the goat and sheep industry as a significant economic activity will also be very dependent on the standards of living in the countries where there is a market for the goat products. Rajasthan, Jammu & Kashmir, Uttar Pradesh, Gujarat, Hilly regions of North and Eastern Himalayas are the Indian regions with maximum goat and sheep population.

The major products exported are carcasses of lamb (fresh and frozen), carcasses of sheep (fresh and frozen), meat of sheep with bone (fresh and frozen), boneless meat of sheep (fresh and frozen) and meat of goats. India has 11th position of Sheep & Goat meat export to the world with share of 0.77 per cent in 2020 (ComTrade, United Nations, 2021). It has exported 8,696.0 MT of sheep & goat meat to the world for the worth of Rs.448.08 crore during 2021-22. The major export destinations was UAE,

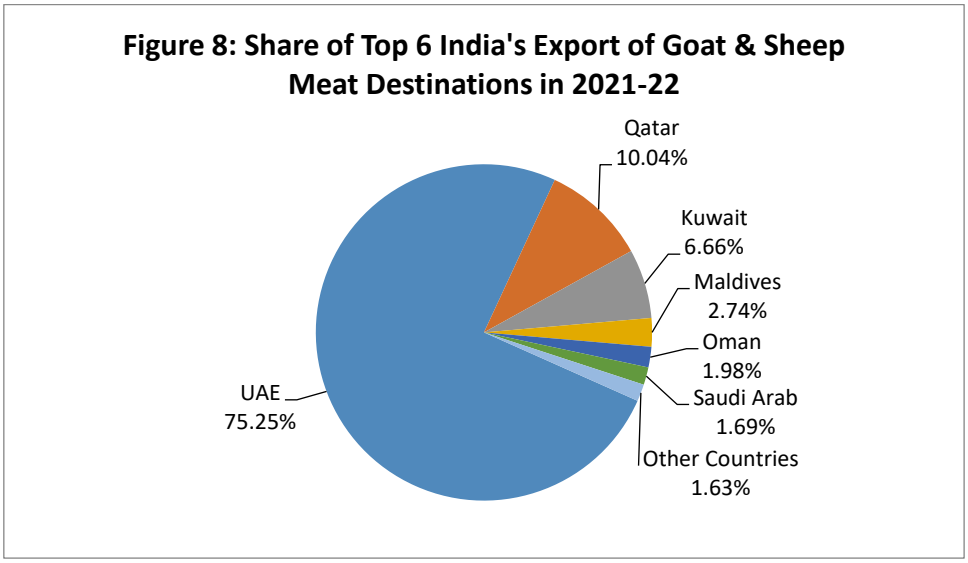
Qatar, Kuwait, Maldives, Oman and Saudi Arab. These six countries, together, accounts for 98.37 per cent of the total sheep and goat meat export during 2021-22 (Table 10 and Figure 8).

Table 10: Country-wise Export of Sheep and Goat Meat from India

(Rs. in crore)

Country	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
UAE	63.69	204.35	360.93	408.49	472.59	499.99	466.5	501.04	454.32	248	337.2
Qatar	24.6	43.64	55.31	70.49	84.17	83.34	80.02	80.98	61.99	35.05	44.99
Kuwait	14.02	27.87	39.25	63.5	66.38	65.31	74.89	77.39	61.64	18.29	29.86
Maldives	0.98	0.45	1.07	0.98	2.44	2.39	4.09	6.92	11.26	5.58	12.28
Oman	6.08	9.52	16.86	15.26	11.14	13.07	20.3	24.83	18.34	8.86	8.85
Saudi Arab	130.5	125.73	196.09	255.7	188.11	194.61	177.54	84.93	27.71	9.6	7.58
Other Countries	12.97	14.89	24.59	13.69	12.92	17.14	40.62	91.44	18.78	5.06	7.32
Total	**252.84**	**426.45**	**694.1**	**828.11**	**837.75**	**875.85**	**863.96**	**867.53**	**654.04**	**330.44**	**448.08**

Source: APEDA.



3. Other Meat

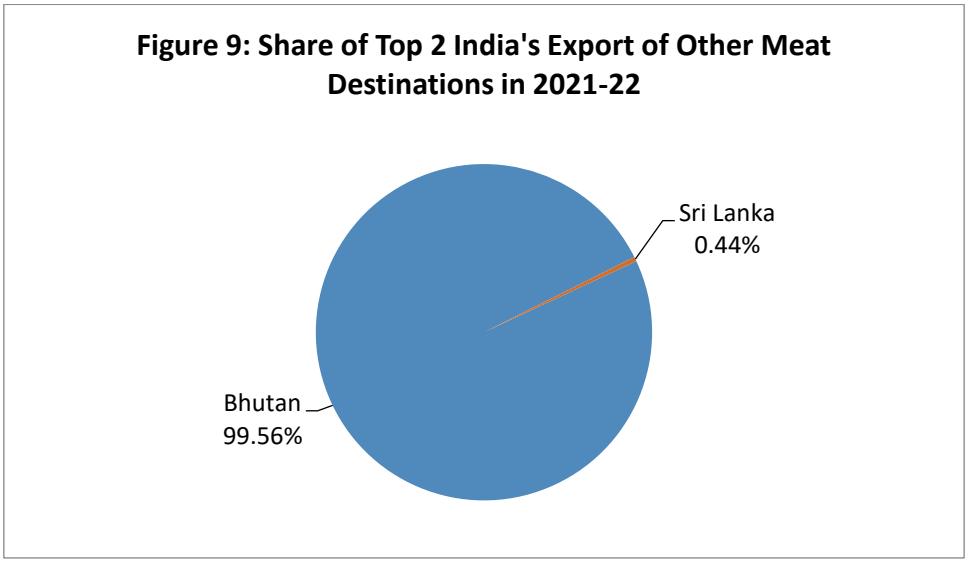
Other Meat contributes significantly in livestock products in India. The local initiatives to promote quality labels and innovative products for cheeses, meat and fibres could help Swine/Pigs, Rabbits, Horse, Camel, Primates, etc in keeping a role for sustainable development in an eco-friendly environment all over the world. The major areas for Swine/Pig meat production are Uttar Pradesh, Bihar, and Maharashtra. The country is largest exporters of other meat to the world. The country has exported 1,947.0 MT of other meat to the world for the worth of Rs.45.50 crore in 2021-22.The major export destinations were Bhutan and Sri Lanka. These two countries together accounts for 100 per cent of the total other meat export during 2021-22 (Table 11 and Figure 9). The export of other meat grew about 152 per cent in 2021-22 as compared to previous year.

Table 11: Country-wise Export of Other Meat from India

(Rs. in crore)

Country	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Bhutan	1.22	0.29	3.32	1.67	0	0.52	5.95	12.17	11.98	18.01	45.3
Sri Lanka	0	0.01	0	0	0	0	0	0.03	0	0	0.20
UAE	0	0	0	0	0	0	0	0	0	0	0
U S A	0	0.01	0	0	0	0	0.13	0	0.01	0	0
Vietnam	0.52	0.33	0	0	0	0	5.53	1.15	3.09	0	0
Zambia	0	0	0	0	0	0	0	0.13	0	0	0
Other Countries	1.94	1.68	0.08	0.8	0	0.39	4.81	0.22	1.49	0.06	0
Total	**3.68**	**2.32**	**3.40**	**2.47**	**0**	**0.91**	**16.42**	**13.70**	**16.57**	**18.07**	**45.50**

Source: APEDA.



4. Processing Meat

The total processing capacity in India is over one million tonnes per annum, of which 40-50 per cent is utilized. The lack of sufficient cold chain infrastructure is one of the major bottlenecks to processing. Government of India has setting up of Rs.15000 crore Animal Husbandry Infrastructure Development Fund under Atmanirbhar Bharat Abhiyan for financing the meat processing and value added infrastructure. India exports about 18,95,497.05 tons of animal products, mostly buffalo meat. Indian buffalo meat is witnessing strong demand in international markets due to its lean character and near organic nature (Kumar, 2019). Unlike cow slaughter, there is no social taboo in killing buffalo for meat. Goat and lamb meat are relatively small segments where local demand is outstripping supply.

The recent trend in India is to establish large abattoirs-cum-meat processing plants with the latest technology. India has already established 10 state-of-art mechanized abattoirs-cum-meat processing plants in various states based on slaughtering buffaloes and sheep. These plants are environmentally friendly, where all the slaughterhouse by-products are utilized in the production of meat-cum-bone meal, tallow, bone chips and other value-added products. The plants follow all the sanitary and phyto-sanitary measures required by the International Animal Health code of World Organization for Animal Health (O.I.E.). These plants mostly produce buffalo meat for export. India is becoming a major buffalo meat producing country and will

be a main player in the international market with additional establishment of the state-of-art-abattoirs-cum-meat processing.

Andhra Pradesh, West Bengal, Maharashtra, Kerala, Delhi, Uttar Pradesh and Rajasthan are the key areas of processed meat production in India. The main products exported are sausages & canned meat, homogenized meat preparations, preserved meats, other poultry meat, preserved meat of bovine animals, meat extracts & meat juices. About 90 per cent of buffalo meat exports are boneless and the remaining is shipped as carcases. India has 61th position as an exporting country for processing meat with share of 0.05 per cent in 2020.

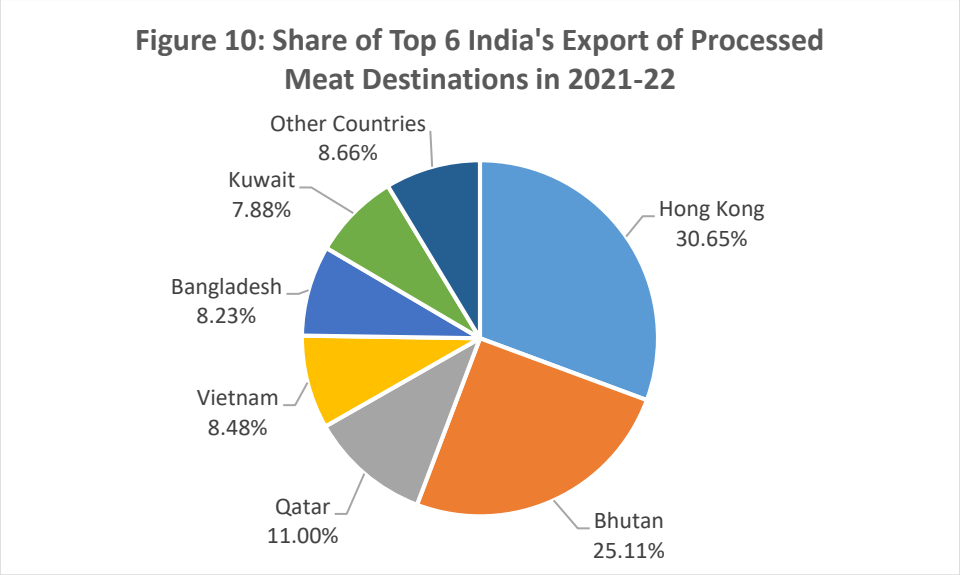
The country has exported 462.6 MT of processed meat to the world worth Rs.11.55 crore during 2021-22. Hong Kong, Bhutan, Qatar, Vietnam, Bangladesh, Myanmar and Kuwait are the major export destinations (Table 12 and Figure 10).These six countries together accounts for 91.34 per cent of the total processed meat export during 2021-22. Globally, India is the second fastest growing processed meat and poultry markets with CAGR of about 22 per cent. However, Indonesia stands first in this category with 26.7 per cent CAGR during 2011-15 (Kumar, 2019). Global innovation within processing meat category has increased over the years and many markets with the highest growth potential are from Asia Pacific region, especially India.

Table 12: Country-wise Export of Processed Meat from India

(Rs. in crore)

Country	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**
Hong Kong	0.00	0.46	0.81	0.00	0.00	0.00	0.00	0.00	0.00	7.02	3.54
Bhutan	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.68	0.83	1.31	2.90
Qatar	0.03	0.05	0.07	0.13	0.00	0.00	0.98	1.86	1.78	1.43	1.27
Vietnam	0.00	0.00	0.29	5.46	0.00	0.25	3.17	0.51	0.02	0.00	0.98
Bangladesh	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.49	0.58	0.72	0.95
Kuwait	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.91
Other Countries	9.49	8.84	6.51	8.62	6.19	4.33	5.31	10.40	11.79	2.16	1.00
Total	**9.52**	**9.38**	**7.68**	**14.21**	**6.19**	**4.58**	**9.91**	**13.94**	**15.24**	**12.64**	**11.55**

Source: APEDA.



5. Poultry Products

Poultry is one of the fastest growing segments of the agricultural sector in India today. While the production of agricultural crops has been rising at a rate of 1.5 to 2 per cent per annum that of eggs and broilers has been rising at a rate of 8 to 10 per cent per annum. As a result, India is now the world's fifth largest egg producer and the eighteenth largest producer of broilers. The potential in the sector is due to a combination of factors - growth in per capita income, a growing urban population and falling real poultry prices. Poultry meat is the fastest growing component of global meat demand, and India, the world's second largest developing country, is experiencing rapid growth in its poultry sector. In India, poultry sector growth is being driven by rising incomes and a rapidly expanding middle class, together with the emergence of vertically integrated poultry producers that have reduced consumer prices by lowering production and marketing costs. Integrated production, market transition from live birds to chilled and frozen products, and policies that ensure supplies of competitively priced corn and soybean are keys to future poultry industry growth in India. There are number of small poultry dressing plants in the country. These plants are producing dressed chickens. In addition to these plants, there are five modern integrated poultry processing plants producing dressed chicken, chicken cut parts and other chicken products. These plants will manufacture egg powder and frozen egg-yolk for export.

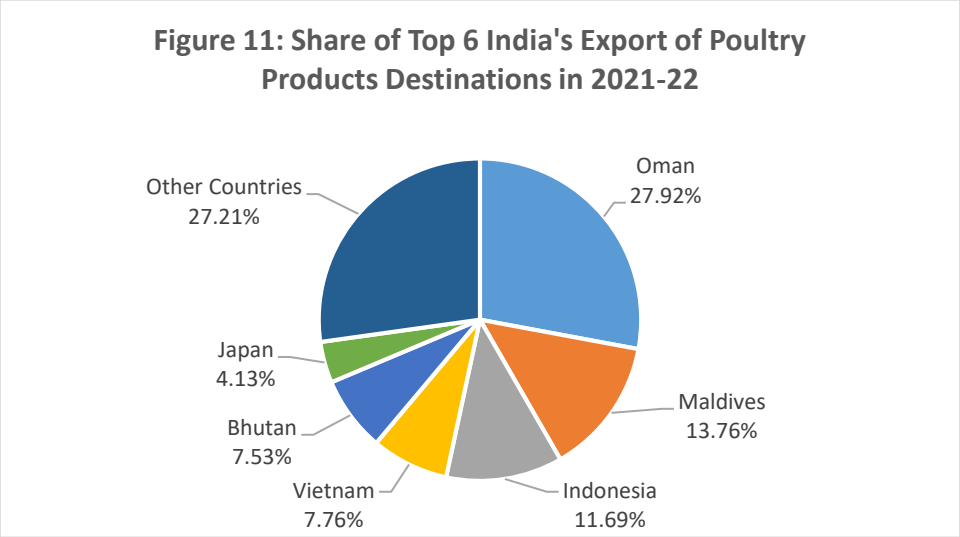
India has exported 320240.4 MT of poultry products with value of Rs.529.81 crore during the year 2021-22 with exports of Rs.147.94 crore, Oman is the leading export destination of poultry products from India, accounting for a share of 27.92 per cent during 2021-22. Maldives, Indonesia, Vietnam, Bhutan and Japan are the other major export destination for poultry products (Table 13 and Figure 11). Gulf and ASEAN and Southeast Asian countries are the major markets for poultry products. There is a need for developing efficient distribution system with large investments in cold chain infrastructure and increasing the market acceptability of frozen chicken is going to be the key industry drivers in the long-term. Other factors such as the increased requirement for upgraded infrastructure will also play a key role in determining India’s continued presence in the global poultry market (Agriculture Today, 2017). Further, Indian meat contains less fat and the present international trend is favourable for low fat meat.

Table 13: Country-wise Export of Poultry Products from India

(Rs. in crore)

Country	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Oman	104.71	25.49	82.29	140.55	203.84	159.49	204.93	242.26	188.47	102.59	147.94
Maldives	22.93	24.34	26.65	36.38	51.71	47.83	51.52	64.96	66.62	65.96	72.91
Indonesia	26.19	37.52	52.87	41.64	45.39	45.70	37.45	42.24	45.95	47.14	61.94
Vietnam	22.52	15.67	22.36	26.83	21.20	27.32	43.83	51.04	39.60	40.58	41.09
Bhutan	2.29	5.06	9.59	8.47	7.20	9.45	12.93	20.00	20.95	27.41	39.87
Japan	18.59	22.24	38.80	56.25	80.18	18.99	24.23	54.73	28.75	21.07	21.90
Other Countries	260.84	364.62	334.24	341.10	357.16	221.49	176.95	212.08	184.27	130.74	144.16
Total	**458.07**	**494.94**	**566.80**	**651.22**	**766.68**	**530.27**	**551.84**	**687.31**	**574.61**	**435.49**	**529.81**

Source: APEDA.



6. Animal Casings

India, being a country with numerous states and vast area, has resources for production of animal casings of high quality with excellent calibration and shining colour. This makes India one of the major exporter of animal casings in the world with share of 0.21 per cent in 2020. Animal products including the products or animal casing like bladders & stomachs of animals, casings of other animals, cattle casings, guts for animal casings, sheep casings, etc.

India has exported 13826.91 MT of animal casings to the world for the worth of Rs. 474.03 crore in 2021-22. The major export destinations was Vietnam, Hong Kong, Malaysia, Cambodia, South Africa and Spain. These six countries, together, accounts for 98.53 per cent of the total animal casings export during 2021-22 (Table 14 and Figure 12).

Table 14: Country-wise Export of Animal Casings from India

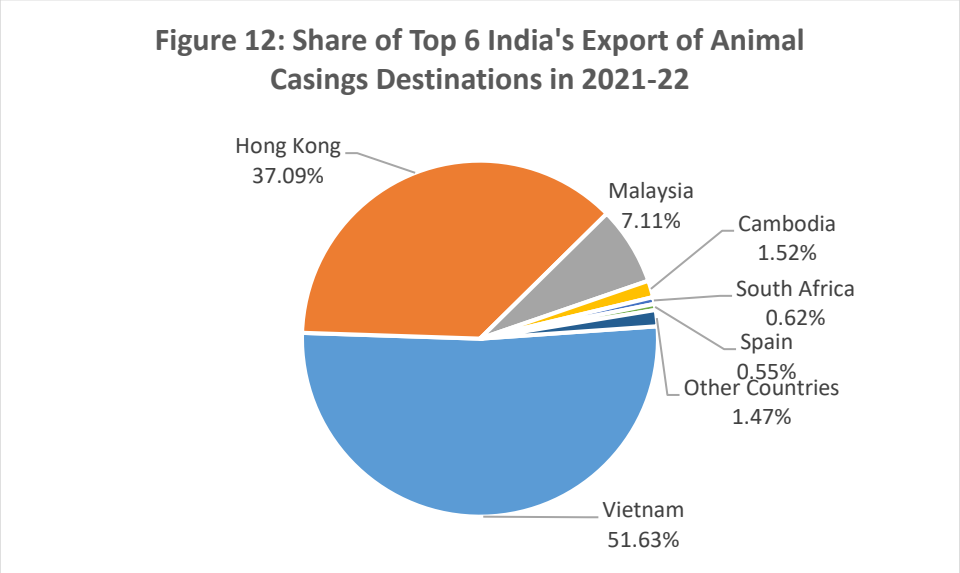
(Rs. in crore)

Country	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Vietnam	0.87	0	0	0	0	0	265.28	424.13	243.86	27.80	244.76
Hong Kong	0.51	0	0	0.41	0	0	10.24	2.26	87.53	350.28	175.84
Malaysia	1.5	0	0	0	0	0	0.16	3.64	9.46	17.64	33.72

Cambodia	0	0	0	0	0	0	0	0	0	4.21	7.21
South Africa	2.42	2.00	3.35	3.84	2.78	3.27	2.87	4.45	3.61	3.72	2.92
Spain	1.38	0.29	4.05	1.45	0.58	0.44	1.18	0.10	0.02	0.54	2.62
Other Countries	27.29	16.07	21.05	13.62	13.68	10.13	47.71	46.08	54.02	12.34	6.96
Total	**33.97**	**18.36**	**28.45**	**19.32**	**17.04**	**13.84**	**327.44**	**480.66**	**398.5**	**416.53**	**474.03**

Source: APEDA.

Figure 12: Share of Top 6 India's Export of Animal Casings Destinations in 2021-22



7. Dairy Products

India now has indisputably the world's biggest dairy industry—in terms of milk production; last year India produced close to 209.96 million tonnes of milk, which is about 50 per cent than the US and more than three times as much as the much-heralded new growth champion, China. Appropriately, India also produces the biggest directory or encyclopaedia of any world dairy industry. The main dairy products exported are butter fresh, buttermilk, butter oil, fresh cheese, milk & cream in powder, milk for babies, other fat, skimmed milk powder, other milk power, whole milk and ghee. Uttar Pradesh, Maharashtra, Himachal Pradesh, Madhya Pradesh, Punjab, Rajasthan and Tamil Nadu are the major production states of dairy products in India.

India's export of dairy products was 108,711.3 MT to the world for the worth Rs.4742.70 crore during the year 2021-22 as against Rs.2382.91 crore in previous year, registering a growth of about 99 per cent. The major destination and direction of export of dairy products from India is given in Table 15. The major export destinations was USA, Bangladesh, UAE, Saudi Arab, Bahrain and Malaysia (Figure 13). These six countries together accounts for 69.25 per cent of the total dairy products export during 2021-22. Presently India become one of the largest producers of milk (209.96 million tonnes) and value added milk products in the world, underpinned by good monsoon rains that increased feed and fodder availability and raised dairy cattle herd numbers. India’s efforts to improve the low genetic potential of dairy cattle, increase fodder availability and expand milk collection continued under various development programmes, including the National Livestock Mission and Feed Development. In the dairy industry, packing of products is crucial since it plays an important role in

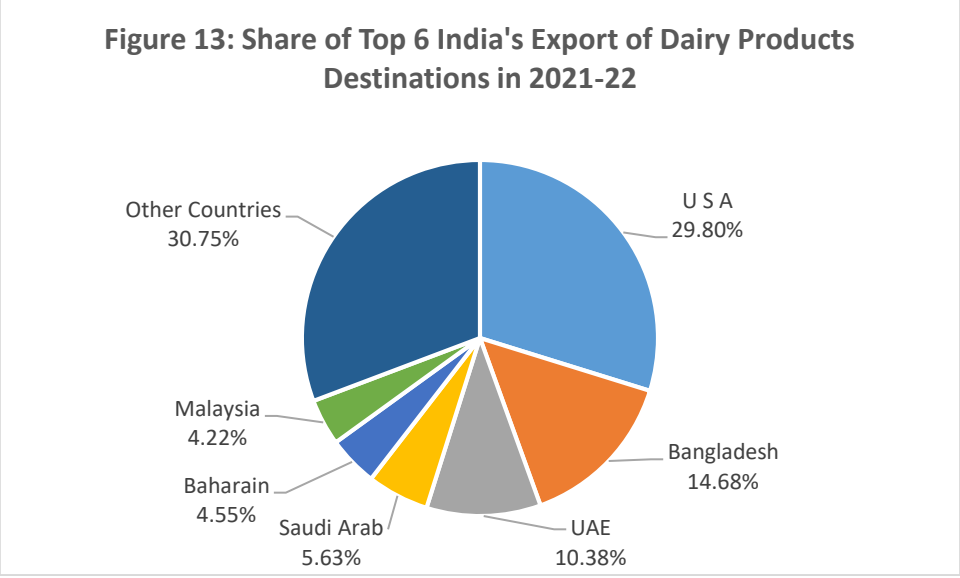
maintaining the freshness and quality of food products. In case of perishable food products, packaging is of most important consideration as it provides protection from undesirable physiological changes and quality deterioration. Government of India created a Dairy Processing and Infrastructure Development Fund (DIDF) with NABARD, with a total corpus of Rs.8,004 crore to be utilised during the period from 2017-18 to 2019-20. The objectives of the scheme are modernisation and infrastructure augmentation for milk processing and value addition and to ensure optimum price realisation by the primary producers. It envisages creation of additional milk processing capacity of 12.6 million litres per day (MLPD), modernisation capacity of 1.2 MLPD, milk powder processing capacity of 210 million tonnes per day (MTPD), and other infrastructure facilities during the implementation period. In June 2021, new components were added in DIDF scheme to create additional infrastructure in dairy sector (PIB, 2021).

Table 15: Country-wise Export of Dairy Products from India

(Rs. in crore)

Country	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
U S A	321.94	760.36	738.96	670.97	717.94	615.35	603.30	830.44	579.07	760.90	1413.09
Bangladesh	3.34	260.96	642.57	229.16	102.80	138.25	69.35	277.20	15.01	193.00	696.36
UAE	97.02	147.60	319.20	206.64	198.59	224.07	234.88	336.25	289.92	337.24	492.21
Saudi Arab	30.84	140.11	250.47	94.54	66.45	41.35	67.17	130.07	118.16	160.67	266.80
Baharain	7.75	22.31	36.75	13.95	15.11	12.99	25.11	34.91	27.09	24.45	215.75
Malaysia	2.90	12.40	157.82	19.90	7.16	5.22	13.88	106.31	12.41	78.25	200.22
Other Countries	184.00	980.92	2261.95	926.50	573.41	674.40	940.65	1660.34	940.71	828.40	1458.27
Total	**647.79**	**2324.66**	**4407.72**	**2161.66**	**1681.46**	**1711.63**	**1954.34**	**3375.52**	**1982.37**	**2382.91**	**4742.70**

Source: APEDA.



India's milk production is challenged by several factors such as lower milk productivity, water scarcity, lack of formalisation of the market structure, insufficient feed and fodder resources, lack of farming techniques, small herd size and inadequate veterinary services. This, coupled with a plethora of other factors prevent India from being a major player in the international dairy market. In fact, India's share in global dairy exports stands at less than 1 per cent, compared to major exporters such as Germany (12.4%), New Zealand (12%), Netherlands (11.6%), France (8.3%) and USA(5.3%). Under the WTO regime of international trade, India's dairy products have

been facing stiff competition from other global player's with respect to sanitary requirements and certification issues especially in markets of developed countries.

8. Natural Honey

Honey and beekeeping have a long history in India. Honey was the first sweet food tasted by the ancient Indian inhabiting rock shelters and forests. The raw materials for the beekeeping industry are mainly pollen and nectar that come from flowering plants. Both the natural and cultivated vegetation in India constitute an immense potential for development of beekeeping. About 500 flowering plant species, both wild and cultivated, are useful as major or minor sources of nectar and pollen. There are at least four species of true honeybees and three species of the stingless bees. Several sub-species and races of these are known to exist. In recent years, the exotic honeybee has been introduced. Together these represent a wide variety of bee fauna that can be utilized for the development of honey industry in the country. There are several types of indigenous and traditional hives including logs, clay pots, wall niches, baskets and boxes of different sizes and shapes. North East Region of India and Maharashtra are the major areas for natural honey production.

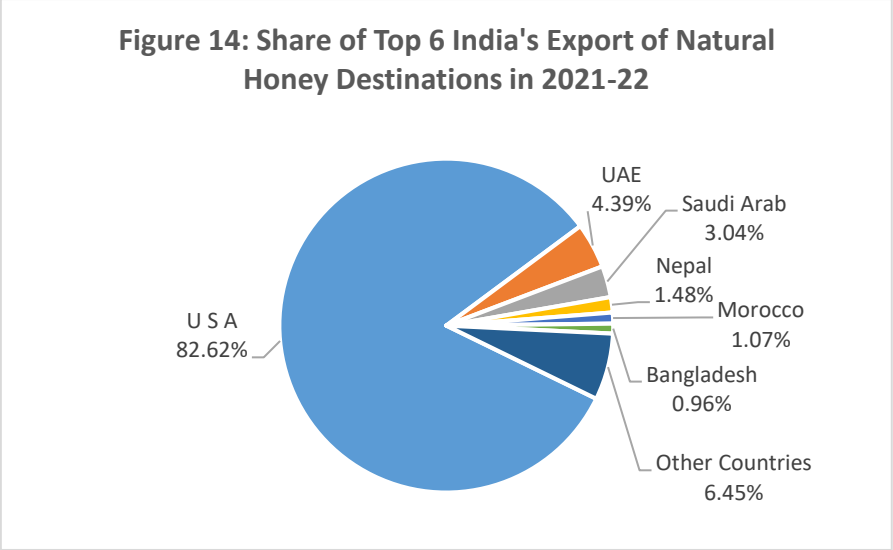
India has exported 74413.05 MT of natural honey to the world for the worth of Rs.1,221.17 crore during 2021-22 to the USA, UAE, Saudi Arab, Nepal, Morocco and Bangladesh and these six countries, together, accounts for 93.55 per cent of the total natural honey export (Table 16 and Figure 14).

Table 16: Country-wise Export of Natural Honey from India

(Rs. in crore)

Country	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
U S A	309.70	369.30	442.00	618.95	453.87	509.62	563.09	475.73	482.58	1008.90
UAE	3.58	13.53	15.31	17.74	20.85	27.44	30.93	25.92	45.04	53.59
Saudi Arab	18.28	27.10	39.58	18.27	12.60	40.19	30.66	33.54	49.01	37.07
Nepal	1.53	1.36	2.11	4.39	4.34	6.43	9.55	8.01	14.30	18.10
Morocco	3.25	5.02	4.87	8.26	4.41	4.63	12.29	9.51	12.65	13.02
Bangladesh	1.85	5.14	4.75	7.75	10.00	7.77	7.01	7.01	15.65	11.69
Other Countries	18.09	23.53	26.45	30.50	51.71	57.51	78.63	74.10	96.89	78.80
Total	**356.28**	**444.98**	**535.07**	**705.86**	**557.78**	**653.59**	**732.16**	**633.82**	**716.12**	**1221.17**

Source: APEDA.



9. Casein

Casein is the main protein found in milk and contains 21 amino acids. Acid Casein is produced by controlled acid precipitation from skim milk. It is insoluble in water, completely soluble in alkali and heat stable. The main products exported are casein, casein derivatives casein glues, caseinate other casein drvts and casein glues.

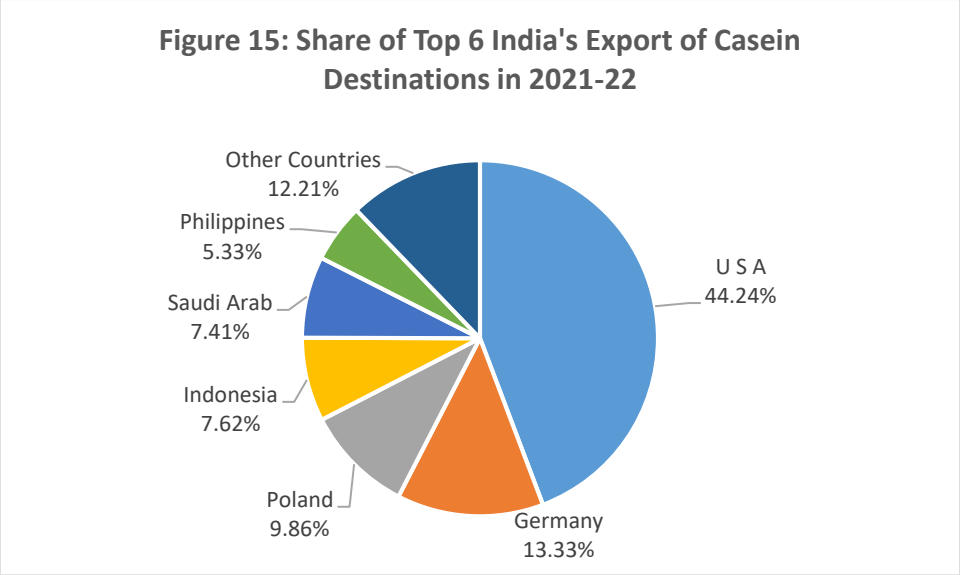
The India has exported 8,768.47 MT of Caseins to the world for the worth of Rs.592.79 crore during the year 2021-22. The USA is the leading export destinations of Casein from India, accounting 44.24 per cent followed by Germany (13.33%), Poland (9.86%), Indonesia (7.62%), Saudi Arab (7.41%) and Philippines (5.33%). These six countries together accounts for 87.79 per cent of the total natural honey export during 2021-22 (Table 17 and Figure 15).

Table 17: Country-wise Export of Casein from India

(Rs. in crore)

Country	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
U S A	429.55	339.47	211.51	71.11	129.9	44.32	162.81	0.97	108.68	262.26
Germany	40.97	53.96	29.04	16.43	1.03	0	5.47	0	0	79.00
Poland	33.43	109.77	57.36	25.33	21.69	3.31	0	0	2.49	58.44
Indonesia	0	0	0	0	0	0	0	0	0	45.19
Saudi Arab	22.71	36.51	32.48	20.03	0	0	3.92	0	26.54	43.93
Philippines	3.94	19.04	17.02	13.80	18.20	14.50	2.35	1.93	13.64	31.59
Other Countries	25.68	78.18	81.17	69.24	66.83	42.57	45.96	4.63	29.06	72.38
Total	**556.28**	**636.93**	**428.58**	**215.94**	**237.65**	**104.7**	**220.51**	**7.53**	**180.41**	**592.79**

Source: APEDA.



10. Albumins

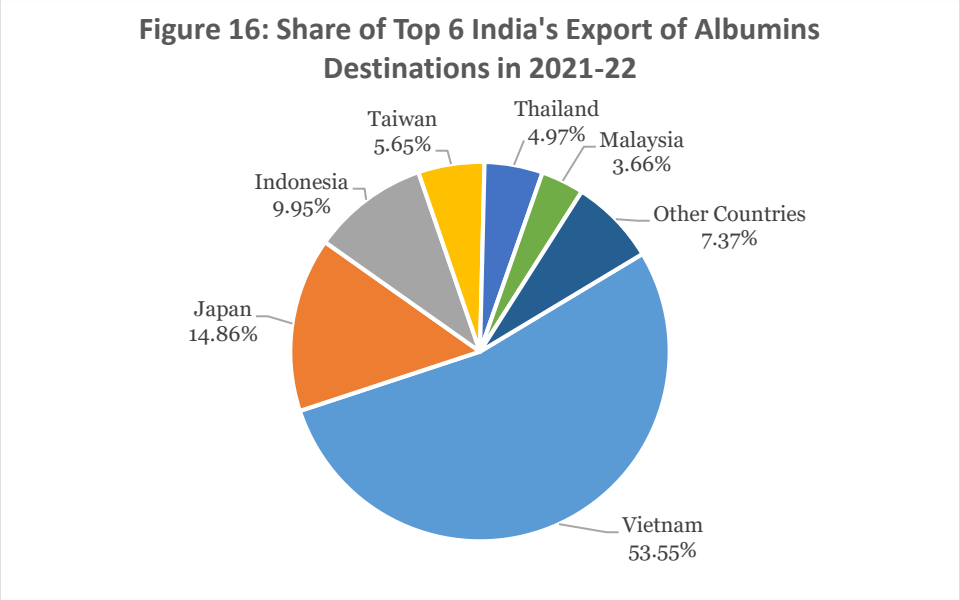
The albumins are a family of globular proteins, the most common of which is serum albumin. The albumin family consists of all proteins that are water-soluble, are moderately soluble in concentrated salt solutions, and experience heat denaturation. Albumins are commonly found in blood plasma, and are unique from other blood proteins in that they are not glycosylated. Substances containing albumins, such as egg white, milk are called albuminoids. The egg albumin and milk albumin are the major export items and India has exported 1,465.0 MT of Albumin to the world for the worth of Rs.89.78 crore during the year 2021-22 (Table 18 and Figure16). The major export destinations of Indian Albumins are Vietnam, Japan, Indonesia, Taiwan, Thailand and Malaysia. These six countries together accounts for 92.63 per cent of the total natural honey export during 2021-22. India's has 15th position as an exporting country for Albumin with share of 0.66 per cent in the world during 2020.

Table 18: Export of Albumins (Eggs & Milk)

(Rs. in crore)

Country	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Vietnam	10.35	17.81	25.49	29.25	17.97	17.78	25.2	23.65	37.46	48.08
Japan	52.26	80.39	98.52	86.37	45.21	42.59	51.94	31.13	36.12	13.34
Indonesia	1.89	4.27	5.43	4.56	4.58	4.76	6.4	9.75	5.85	8.93
Taiwan	4.66	1.65	3.04	5.21	0.87	0.93	0.23	0.2	0.65	5.07
Thailand	5.43	7.48	8.72	5.63	5.59	5.39	4.81	6.94	3.09	4.46
Malaysia	7.45	11.57	11.05	7.03	1.62	2.76	2.12	0.63	0.65	3.29
Other Countries	134.48	142.61	169.81	209.9	238.93	275.12	250.6	362.02	217.34	6.62
Total	**90.16**	**131.63**	**161.18**	**149.81**	**87.8**	**83.73**	**103.05**	**82.29**	**94.93**	**89.79**

Source: APEDA.



Agreement of Agriculture (AoA) under WTO

The WTO Agriculture Agreement provides a framework for the long-term reform of agricultural trade and domestic policies, with the aim of propoting to fairer competition and a less distorted sector. The Agreement of Agriculture (AoA) covers the **Market access**-the use of trade restrictions, such as tariffs on imports, **Domestic support**-the use of subsidies and other support programmes that directly stimulate production and distort trade under the **Green box support** (It is given on items which have minimal impact on trade, e.g., pest and disease control, market intelligence, it is an exempted support, **Blue box support** (It is product-limiting subsidy and pertains mainly to the developed countries. It is exempted from reduction commitment under WTO and **Special and differential treatment box support** (It includes investment subsidy to agricultural sector for farm development work like land leveling, shallow wells etc.), and **Export competition**- the use of export subsidies and other government support programmes that subsidize exports. These heavy subsidies distort free market competion and make the prices of livestock products lower than the real cost. By putting the domestic support in green box category, developed countries are not providing level playing field for developing countriries including India. Under the AoA, WTO members agree to "schedules" or lists of commitments that set limits on the tariffs they can apply to individual products and on levels of domestic support and export subsidies.

Tariffs and Bound Rates

The tariffs and bound rates of major livestock products are given in Table 19. The basic customs duty on various dairy products varies from 30 per cent to 60 per cent, whereas bound duty ranged between 40 per cent to 150 per cent. In case of meat and poultry products, the basic customs duty varies from 30 per cent to 100 per cent and bound duty varies from 55 per cent to 150 per cent. On an average tariff rate applied by the developed countries are much higher than India, resulting the domestic markets would have been flooded with cheap and highly subsidised products, which would only lead to large-scale resentment. SPS also continues to a major barrier for developing countries including India attempting to diversify their exports in meat and dairy products.

Table 19: Tariffs and Bound Rates on Major Livestock Products (As on 28.10.2021)

Items	Prevailing Basic Customs Duty(BCD) in %	Bound duty (%)
Dairy Products		
Fresh milk and cream	30	100* (varies with fat content)
Butter and melted butter (ghee)	40	40
Cheese	30	40
Milk powder	60	60
Yoghurt	30	150
Meat & Poultry		
Chicken sausages	100	150
Chicken leg (processed)	100	150
Meat of chicken, not cut in pieces	30	100
Meat of bovine animals, fresh or chilled	30	100
Other meat and offal	30	100
Processed hams	30	55

Source: Agricultural Statistics at a Glance 2021, Ministry of Agriculture & Farmers Welfare, Department of Agriculture & Farmers Welfare, Directorate of Economics & Statistics, Government of India.

CHALLENGES TO INDIAN AGRICULTURE EXPORTS

The value of export of livestock and livestock products in India increased from Rs.152 crore in 1990-91 to Rs.30953 crore in 2021-22 after launch of libralised global trade (WTO). There has been substantial increase in the export of almost all the livestock products in the last 13 years (Table 8), but despite being one of the top producers of livestock products, India does not figure among the top exporters of agricultural products including livestock and livestock products. There are five critical challenges that contribute to India's relatively low rank among global agriculture exporters: low productivity and high logistics costs; limited value addition; export promotion and branding challenges; non-tariff barriers and quality issues.

Low Productivity and High Logistics Costs: India lags other large producers in productivity per annual for cattle and buffalo. As per Integrated Sample Survey, average animal productivity of cattle in India during 2019-20 was 1777 kg/animal per year as against the world average of 2699 kg/animal per year during 2019 (FAO, 2021 and PIB, 2021) One reason is that Indian dairy farms size are small, making it harder to achieve economies of scale. India's cost of logistics is currently around 14 per cent of GDP – higher than developed country exporters like the US (9.5%). India's tremendous push to reduce logistics costs to below 10 per cent will have a significant impact on its competitiveness in agricultural exports including livestock products export.

Limited Value Addition: India is a more prolific exporter of commodities than of value-added agriculture products -the country ranks 10th globally in processed meat, 35th in dairy and 61st in poultry and egg. Processed foods only constitute 16 per cent of APEDA exports in 2021-22 (PIB, 2022); in comparison, 25 per cent of US exports and

49 per cent of Chinese exports are value-added. Reasons for low value addition include relative lack of private sector investment and adequate incentives. For example, the fragmented nature of exporters for some commodities, make it easier to export a mass product to many markets as opposed to creating a processed product customised for the tastes of a few markets.

Export Promotion and Branding Challenges: While India has invested heavily in a broad range of export promotion schemes, India's export incentives have declined over time. As the country moves to respond to WTO compliance in export promotion, there is an opportunity to ramp up export incentives and to create a sharper, more coordinated investment strategy specifically for promotion of agricultural exports, with a focus on value addition.

Non-tariff Barriers: Indian agricultural exports including livestock products also face non-tariff barriers in attractive markets such as Europe (e.g., more stringent shrimp inspections than for other top exporting countries and barriers related to foot and mouth disease for buffalo, which is actually rare in India). Non-tariff barriers and lack of strong trade agreement with target markets are key inhibitors to dramatically increasing Indian agricultural exports.

Quality Issues: Indian agriculture commodities meet the sanitary and phytosanitary (SPS) standards of the domestic market but encounter issues in US and EU. SPS issues lead to at-port rejections and limit India's ability to significantly penetrate the European market. For instance, India has the highest number of US notifications and refusals between 2014 and 2018, underscoring the quality challenges India will need to grapple with to grow exports.

Measures taken to enhance the Agricultural Exports including Livestock Products

The recent rise in export of agricultural and processed food products including livestock products largely due to the various initiatives taken by Centre through APEDA.

a. APEDA has created products matrix for 50 agricultural products which have good scope for expanding our exports portfolios.

b. Centre has organizing virtual Buyer Seller Meets on agricultural and food products with the major importing countries across the world.

c. In order to ensure seamless quality certification of products to be exported, government has recognized 220 labs across India to provide services of testing to a wide range of products to exporters.

d. Centre, through APEDA also assists in upgradation and strengthening of recognized laboratories for export testing and residue monitoring plans. APEDA also provides assistance under the financial assistance schemes of infrastructure development, quality improvement and market development for boosting export of agricultural products.

e. The participation of exporters in the International Trade Fairs was organized, which provides a platform to the exporters to market their food products in the global marketplace.

f. APEDA carries out registration of meat processing plants and abattoirs for ensuring compliance with global food safety and quality requirements. Another key initiative includes development and implementation of traceability systems, which ensure the food safety, and quality compliances of the importing countries.

g. For boosting agricultural exports, APEDA compiles and disseminates various international trade analytical information, market access information amongst exporters and address trade enquiries.

h. As part of the PM Gati Shakti - National Master Plan, APEDA is collaborating with various ministries including railways and roadways for enhancing connectivity through faster transportation of agricultural products, as they are perishable in nature so it requires immediate and fast delivery to its destination from the production points.

i. Organised business to business exhibitions in different countries, exploring new potential markets through product specific and general marketing campaigns by active involvement of Indian Embassies.

j. Organised more than 300 outreach programmes in collaboration with state governments for enhancing the exports of agricultural produce.

k. A Farmer Connect Portal also been set up on APEDA's website for providing a platform for Farmer Producers' Organisations (FPOs) or Farmer Producer Companies (FPCs), Cooperatives and women entrepreneurs to interact with exporters. Around 3,295 FPOs and FPCs and 3,315 exporters have been registered in the portal so far.

l. Agriculture Infrastructure Fund with an amount of Rs.1,00,000 crore has been initiated to provide funding for agriculture infrastructure projects at farm-gate & aggregation points (Primary Agricultural Cooperative Societies, Farmers Producer Organisations, Agriculture entrepreneurs, Start-ups, etc.). This will provide the necessary impetus for the development of farm-gate & aggregation points, affordable and financially viable post-harvest management infrastructure (Kumar, 2021).

m. Animal Husbandry Infrastructure Development Fund (AHIDF) with a corpus of Rs.15,000 crore was set up to incentive investments by individual entrepreneurs, private companies, micro, small and medium enterprises, farmer producer organizations (FPOs) to establish dairy and meat processing and value addition infrastructure and animal feed plants. GoI also approved a Production Linked Incentive Scheme for Food Processing Industry, a scheme focusing on dairy products such as mozzarella cheese, ice cream, milk-based beverages and Indian traditional sweets. The total outlay was Rs.10900 crore from the year 2021 to 2027. It is expected to leverage seven times the private investment and motivate farmers to invest more in inputs thereby driving higher productivity leading to an increase in farmers' incomes and agri-exports.

EFFECT OF THE COVID-19 PANDEMIC ON THE DAIRY SECTOR

The Dairy Market is Robust and Resilient

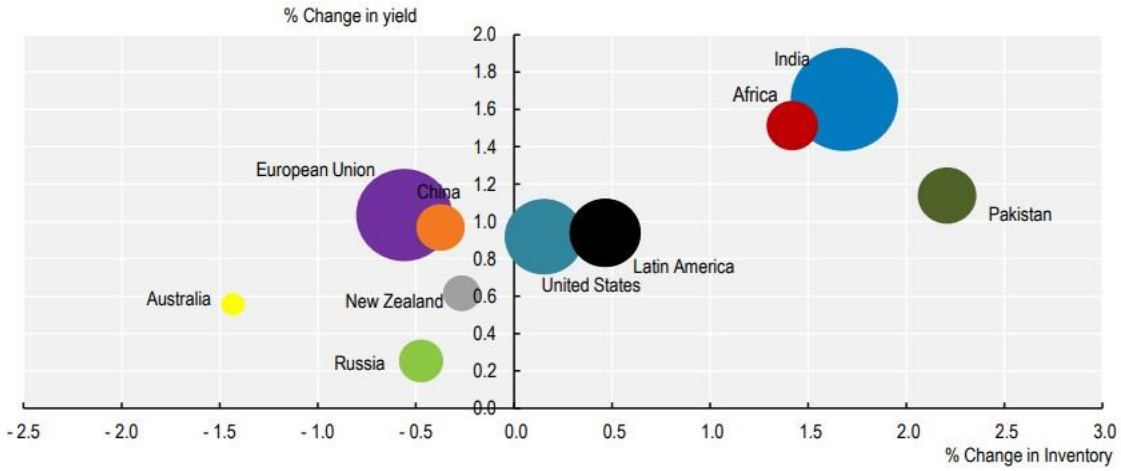
The effect of the COVID-19 pandemic on the dairy sector was relatively modest, in contrast to the initial concerns that it was particularly vulnerable. Among dairy products, the pandemic had the largest effect on world butter prices due to the loss of demand for milk fat from the hospitality sector. Butter prices fell the most sharply in 2020 but have registered increases since mid-2020. In 2021, the FAO Dairy Price Index value increased by 17 per cent with increases across all dairy products, with butter, skimmed milk powder (SMP) and whole milk powder (WMP) rising by 30 per cent, 22 per cent and 27 per cent, respectively, while cheese recorded an 8.8 per cent rise. Strong global demand, especially from Asia and, to a lesser extent from the Middle East, drove those price increases. Global exports and imports had been growing steadily in previous years but slowed down in 2020. Transportation slowdowns, disruptions in the value chain, and decreased demand all contributed to the change in export and import growth. Global exportable supplies were constrained, reflecting lower milk deliveries in Europe and less-than-expected growth in output. Overall, however, the sector adapted quickly and mitigated many of the severe effects seen in the earlier months of the pandemic, while exports rebounded in 2021. World milk production grew by 1.1 per cent in 2021 to about 887 MT. In India, the world's largest milk producer production increased by 2.2 per cent to 195 MT. India, however, has little impact on the world dairy market as they trade only marginal quantities of milk and dairy products. Moreover, Indian production was relatively unaffected by the pandemic, with any excess milk being processed into milk powder.

World dairy imports in 2021 are expected to have reached 10 MT, led by cheese, milk powders and whey powder, underpinned by demand from China in particular. Leading exporters, New Zealand, the European Union, and the United States, supplied much of the higher import demand, while exports from the United States were further supported by a rebound in exports to Mexico.

Production

Greater efficiency in milk production, sustaining yield and production increases world milk production, which is projected to grow at 1.8 per cent per annum (p.a.) (to 1060 MT by 2031) over the next decade, faster than most other main agricultural commodities. The projected growth in the number of milk-producing animals is expected to be strong (1.2% p.a.), especially in regions such as Sub-Saharan Africa and in major milk-producing countries such as India and Pakistan – where yields are low. While yields across the world are expected to grow steadily over the next decade, there is considerable regional variation of growth rates. The strongest growth expected in Southeast Asia and North Africa where average yield growth is around 1 per cent p.a., whereas yields in high income countries are expected to increase by only 0.5 per cent p.a.. In almost all regions of the world, yield growth is expected to contribute more to production increases than herd growth (Figure 17), the drivers of which include optimising milk production systems, improved animal health and feed efficiencies, and improved genetics.

Figure 17: Annual Changes in Inventories of Dairy Herd and Yields between 2021 and 2031

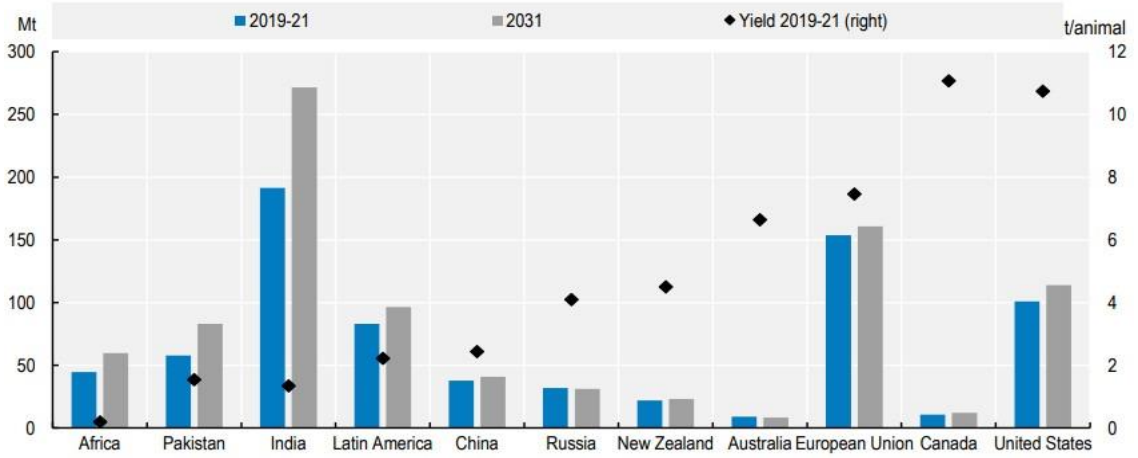


Note: The size of the bubbles refer to the total milk production in the base period 2019-21.
Source: OECD/FAO (2022), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-outl-data-en.

Production in the European Union is projected to grow more slowly than the world average at 0.5 per cent p.a., stemming from milk yields growing at 1 per cent p.a., while dairy herds are declining (-0.5% p.a.). Production in the European Union originates from a mix of grass- and feed-based production systems. In addition, a growing share of milk produced is expected to be organic or in other non-conventional production systems. At present, more than 10 per cent of dairy cows are within, but not limited to, organic systems located in Austria, Denmark, Greece, Latvia, and Sweden. Germany and France have also seen an increase in organic dairy production. However, these ***organic farms have about a quarter lower yield than conventional production, and higher production costs***, but they constitute over 3 per cent of European Union milk production, commanding a considerable price premium. In general, domestic demand (cheese, butter, cream, and other dairy products) is expected to grow only slightly, with most additional production destined for export.

North America has some of the highest average yields per cow, as the share of grass-based production is low, and feeding is focused on high yields from specialised dairy herds (Figure 18). Dairy herds in the United States and Canada are expected to remain largely unchanged and production growth to originate from further yield increases. As domestic demand is projected to remain stronger for milk fats, the United States will mostly export SMP, while Canadian exports of SMP are capped under the United States Mexico-Canada Agreement (USMCA). The United States will also export a sizable amount of cheese, whey, and lactose.

Figure 18: Milk Production and Yield in Selected Countries and Regions

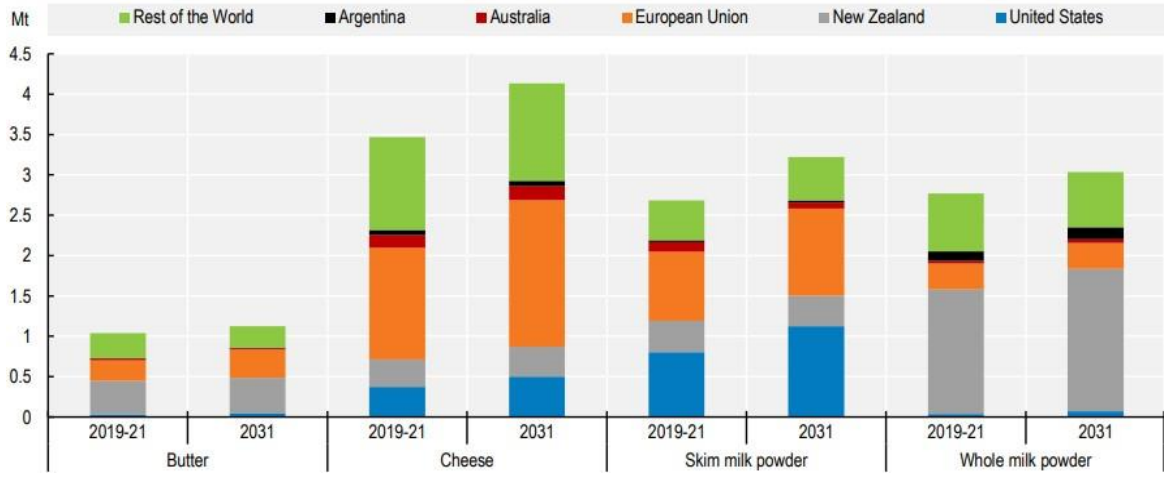


Note: The yield is calculated per milking animal (mainly cows but also buffaloes, camels, sheep and goats).
Source: OECD/FAO (2022), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-outl-data-en.

Dairy Trade will expand from Few Major Exporting to Many Dispersed Importing Countries

Only around 7 per cent of world milk production is traded internationally, primarily due to its perishability and high water content (more than 85%). The notable exceptions are the small amounts of fermented milk products traded between neighbouring dairy producers (i.e. Canada and the United States, the European Union and Switzerland) and imports of liquid milk by China. Chinese imports of liquid milk are primarily supplied by the European Union and New Zealand and have increased considerably in recent years. Trade of liquid milk is made possible primarily by the ability of Ultra-High Temperature milk and cream products to be shipped long distances, but also favourable Chinese freight rates in some cases. China's net imports of fresh dairy products over the base period reached 1.3 MT, and this is not projected to increase much over the next decade. Over 50 per cent of world production of WMP and SMP is traded since these products are often produced only to store and trade milk over a longer time period or distance. World dairy trade is projected to expand over the next decade to reach 14.2 MT in 2031, 15 per cent higher than during the base period. The growth rates vary across dairy products with the strongest growth at 1.7 per cent p.a. for SMP, 1.6 per cent p.a. for cheese, 1.5 per cent p.a. for whey powder, 1.3 per cent p.a. for butter and 0.9 per cent p.a. for WMP. Most of this growth will be met by increased exports from the United States, the European Union and New Zealand. These three countries are projected to jointly account for around 65 per cent of cheese, 71 per cent of WMP, 74 per cent of butter, and 80 per cent of SMP exports in 2031 (Figure 19). Australia, another exporter, has lost market shares although it remains a notable exporter of cheese and SMP. In the case of WMP, Argentina is also an important exporter and is projected to account for 5 per cent of world exports by 2031. In recent years, Belarus has become an important exporter, orienting its exports primarily to the Russian market due to the Russian embargo on several major dairy exporters.

Figure 19: Exports of Dairy Products by Region

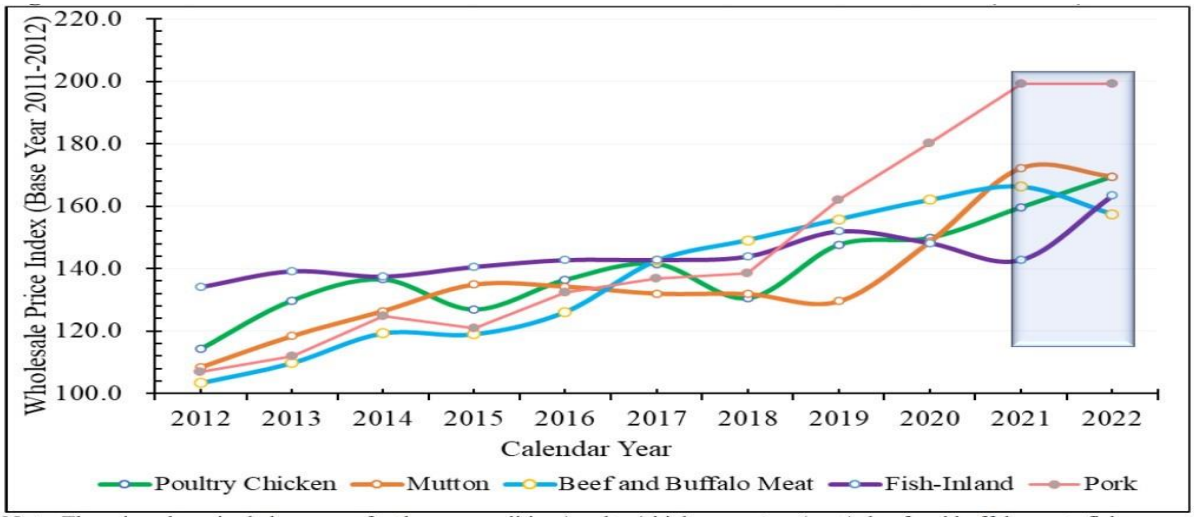


Source: OECD/FAO (2022), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-outl-data-en.

Prices

The wholesale price index (WPI) for buffalo meat (carabeef) and beef in 2022 (January-June) rose six per cent, (Figure 20), a modest increase compared to those for other meats, which make these red meats relatively more affordable and accessible to consumers. In comparison, the wholesale price index for goat meat (classified in India as mutton) has remained steady; pork meat pricing dropped six per cent due to improved, greater supplies. Poultry meat's WPI increased by 27 per cent in the first quarter of 2022 as supplies started to return to normal. The WPI for freshwater or inland fish (both from wild caught and aquaculture), however, has remained relatively stable in the first quarter.

Figure 20: India, Beef and Buffalo Meat, WPI versus Mutton, Chicken, Pork, Fish (Inland), 2012-22



Note: There is only a single base year for the commodities (poultry/chicken, mutton (goat), beef and buffalo meat, fish (inland), and pork. The prices referenced are wholesale index prices, not retail prices. The 2022 data in the rectangular box corresponds to January to June 2022.
Source: Ministry of Commerce and Industry, Trade Data Monitor, and FAS New Delhi office research.

Import Certification Requirements/Documentation: India's livestock products certification Import Certification Requirements/Documentation: India's livestock products certification requirements and documentation for livestock are accessible on the DAHD website. In FY 2022-23 (as on February 2022), duties for the meat and edible offal of bovine animals remain unchanged (Table 20).

Table 20: India, Tariffs for Select Livestock and Products, 2022

HS Code	Item Description	Basic	IGST	Total Duty with SWS of 10 per cent on BCD	Import Policy	Country Preference
01012100-01012990	Live horses	30	12	48.96	Restd	SA, Kr, ASN, My, Jp, LDC
01013010-01019090	Live asses miles & hinnies	30	0	33	Restd	SA, Kr, AS'S, My, Jp^, LDC
01022100 -01029090	Live bovine animals	30	0	33	Restd	SA, Kr, ASN, My Jp, LDC
01031000-01039200	Live swine	30	0	33	Restd	SA, Kr, ASN, My, Jp, LDC
01041010 -01042000	Live sheep & goats	30	0	33	Restd	SA, Kr, ASN, My, Jp, LDC, MERC~
01051100 -01059900	Live poultry that is to say, fowls of the species gallus domesticus, ducks, geese, turkeys and guinea fowls- weighing not more than 185 gram, Grandparent stock, is however, freely importable	30	0	33	Restd	SA, Kr, LDC
01061103-01069000	Other live animals: mammals, birds, insects	30	0	33	Restd	SA, Kr, ASN, My Jp, LDC$
02011000 -02013000	Meat of bovine animals, fresh or chilled	30	0	33	R SanP	SA, Kr, ASN, My, Jp, LDC, Sg+
02021000 -02023000	Meat of bovine animals, frozen, other cuts with/out bone	30	0.5*	31 39 63	R SanP	SA, Kr, ASN, My, Jp, LDC
02031100-02032900	Meat of swine, fresh, chilled or frozen	30	0.5	31 39 63	Fr SanP	SA, Sg, MERC', Kr, ASN, My, Jp, LDC

02011000 -02045000	Meat of sheep or goats, fresh chilled or frozen	30	0.5	31 39 63	Fr SanP	SA, Kr, ASN, My, Jp, LDC
02050000'	Meat of horses, asses, hinnies, fresh, chilled or frozen	30	0.5	31 39 63	Fr SanP	SA, Sg, Kr, ASM, My, Jp, LDC
02062100 -02069090	Edible offal of bovine animals, swine, goats, horses, asses, mules or hinnies, fresh, chilled or frozen	30	0 5	31 39 63	R SanP (#Fr SanP)	SA, Kr, MERC', CI, My, Jp, LDC, Sg
02071100-02071200	Meat, & edible offal, of the poultry of heading 0105, not cut in pieces, fresh or chilled of species gallus domesticus:	30	0.5	31 39 63	Fr SanP	SA, LDC
02071300-02071400	Cuts & offal, fresh or chilled or frozen of species callus domesticus	100	0.5	110 120 5	Fr SanP	SA, Kr, LDC, CI
02072400-02076000	Meat, & edible offal, of the poultry of heading 0105, not cut in pieces. fresh or chilled of turkeys, ducks and geese	30	0.5	31 39 63	Fr SanP	SA, Kr, LDC, CI, ASN, Jp, My

Source: Central Board of Indirect Taxes and Customs, GoI and GAIN Report (2022)
Not: IGST.: Integrated Goods & Services Tax. EC: Education Cess. Restd: Restrcted. R SanP: Restricted Sanitary Permit. Fr SanP: Free Sanitary Permit.
The basic duty is exempted pure-breeding horses in heading 0101 2100 (Custom No.202017).
Grandparent stock is freely importable for HS Code 01050 1100. 0105 1200. 0105 1300.0105 1400. 0105 1900.
** 'o percent for all goods (other than fresh or chilled) other than put up in unit container beaning a registered brand name and actionable claim is available.*
5 percent for all goods (other than fresh or chilled) and put up in unit container bearing a registered brand name and actionable claim is available.
Country Preference: ASN: Association of Southeast Asian Nations. Sg. Singapore. My: Malaysia. Jp: Japan. MERC: MERCOSUR. LDC: Least developed Countries. CI: Chile. Kr: Korea (South). SA: SAPIA. OriginRequirement.
#: for liver of sheep and goats, ^not included for pre-bred breeding animals, ~ for sheep, $ Japan and Korea not preferred country for Ostrich and Emus, +Singapore for other cut with bone, "MERC excluded for carcass & half-carcasses.

CONCLUSIONS

The Government of India has been providing several export incentives to promote the export of agricultural commodities, despite the restrictions imposed by the WTO regime and other regional trade agreement (Kumar, 2021). Growth trend analysis of exports of livestock products suggest that almost all the products showed the positive trend during 2008-09 to 2021-22. The export of livestock products increased from Rs.152 crore in 1990-91 to Rs.30953 crore in 2021-22 with CAGR of 10.05 per cent. The study also revealed that despite COVID-19 pandemic during last two and half years, livestock exports registered an impressive growth of 13.98 per cent in 2021-22 and 16.97 per cent in the first half of 2022-23 as compared to the same period in the previous year. The rise in agricultural exports including livestock products is the outcome of the centres' initiatives such as organising Business to Business exhibitions in different countries, exploring new potential markets through product-specific and general marketing campaigns by the active involvement of Indian Embassies. The share of livestock products export in total agri-exports has increased from 2.53 per

cent in 1990-91 to 8.37 per cent in 2021-22. Export of livestock products has grew at a much higher CAGR of 19.92 per cent as compared to 13.85 per cent of agri-exports. The countries expected to be benefited the most from global increase in demand for animal products are developing countries having low cost of production. Increasing productivity of animals, better animal husbandry practices, breeding facilities can reduce the cost of production. If India has to emerge as an exporting country, it is imperative that we develop proper production, processing and marketing infrastructure, which is capable of meeting international quality requirements. A comprehensive strategy for producing quality and safe dairy and livestock products should be formulated with suitable legal backup. With the trade liberalization, despite the attempts of Indian companies to develop their product range, it could well be that in the future, higher value-added products will be imported and lower value products will be exported. As India has ample export potential of dairy and livestock products, the effective implementation of the SPS and the Technical Barriers to Trade (TBT) measures would provide substantial dividends in the long-run on a sustainable basis.

Suggestions for Enhancing the Export of Agricultural Products including Livestock Products

a. There is a need to develop efficient global value-chains and encourage contract farming /dairy cooperatives on a medium to long-term basis (Gulati, 2018). Exporters and processors must be encouraged to buy directly from farmer producers organisations (FPOs).
b. Creating an export basket of low volume and high value of agricultural commodities should be the goal, going forward. Attention should be given towards diversification of agricultural exports to more products and more destinations with improved infrastructure, trained human resources and support facilities to move up the value chain and meet international standards like sanitary and phytosanitary measures, etc. The efficiency at production level needs to be raised to make the product price competitive in the international market. The producers and exporters need to be educated and trained to maintain the quality of the products as per global standards
c. Besides, India needs to focus upon exports of value added products with increased shelf life and improved packaging to compete in international markets. Concerted efforts to market especially in building international brands and establishing global marketing channels are also called for.
d. As physical infrastructure and logistics remain a main impediment for exports of agricultural products from India, a holistic approach for overall enhancement of export logistics in terms of creating cold chain facilities for transportation and storage to reduce the logistic costs from the present 13-14 per cent to 8 per cent of GDP by 2025. Government of India has recently launched National Logistic Policy to reduce the logistic costs so that our products become competitive in the global markets.
e. India should have an effective and efficient market intelligence system to monitor developments in the world markets (price, subsidy levels, demand and supply) and link import tariffs to world prices.
f. There is a need for an integration of various export promotion organisations such as Agricultural and Processed Food Products Export Development Authority, Ministry of Food Processing Industries, Concerned Industrial Associations, National Dairy Development Board, the Marine Products Export Development Authority, Federation of Indian Export Organisations, Export

Promotion Councils, Food Safety and Standard Authority of India and Export Inspection Council so that collaborative efforts can be synergised with the objective of augmenting exports.

g. Non-tariff barriers restrict agri-exports from India largely because of lack of harmonization of standards for products, stringent quarantine procedures, mandatory labelling and packaging, different minimum residual limits by countries for pesticides, drugs and other contaminants, including dispute with regard to definitions. To reduce compliance costs and minimize disputes, an institution like APEDA can play a crucial role in advocating a globally uniform set of accepted rules and regulations for various products at international forums.
h. APEDA should encourage exporters to source their products directly from farmer producers' organisations, besides focussing on improving quality of food products with compliant to WTO.
i. The FPOs need to explore export markets in order to double farmers' income.

REFERENCES

Agriculture Today (2017). Indian Poultry Market Overview. Agriculture Year Book, 115-117.

Chand Ramesh, Dayanath Jha and Surabhi Mittal (2004). WTO and Oilseeds Sector: Challenges of Trade Liberalisation. *Economic and Political Weekly*, 39(4), 533-537.

FAO (2021). Food and Agriculture Organization of the United Nations. FAOSTAT database. www.faostat.fao.org.

FAO (2022). Dairy Market Review: Overview of Global Dairy Market and Policy Developments in 2021.

GAIN (2022). India-Livestock and Products Annual - 7th September 2022, USDA, Foreign Agriculture Services.

Government of India, Agricultural and Processed Food Products Export Development Authority (2022). Ministry of Commerce, New Delhi.

Government of India. National Accounts Statistics (various issues), Central Statistical Organisation, Ministry of Statistics and Programme Implementation, New Delhi.

Government of India (2021). Agricultural Statistics at a Glance, 2021. Ministry of Agriculture & Farmers Welfare Department of Agriculture, Cooperation & Farmers Welfare Directorate of Economics & Statistics, New Delhi.

Government of India (2018b). Agriculture Export Policy 2018. Department of Commerce, Ministry of Commerce and Industry, GoI, New Delhi.

Government of India, (2021-22). Economic Survey. Ministry of Finance, GoI, New Delhi

Government of India (2020). Growing India's Agricultural Exports through Crop Specific, State-led Plans. Submission to the XV Finance Commission, GoI, New Delhi.

Government of India, (2022). Directorate General of Commercial Intelligence & Statistics. Department of Commerce, Ministry of Commerce and Industry, GoI, New Delhi.

Gulati, Ashok (2018). From Plate to Plough: Freeing the Farm. Financial Express, Delhi Edition, 16 April 2018.

Kumar, Vinod (2014). WTO: Export Potential and Standards for Export of Cumin Seed with Special Reference to Gujarat State. *Indian Journal of Agricultural Marketing*, 28(3), 132-143.

Kumar, Vinod (2018). Dynamics in Export of Animal Products from India. *Rural Pulse*, Issue XXX, Nov-Dec, NABARD, Mumbai

Kumar, Vinod (2019). Export of Animal Products from India: Trends, Performance and Constraints. *Indian Journal of Agricultural Marketing*, 33(3), 46-68.

Kumar, Vinod (2019). Trends and Constraints in Export of Animal Products from India- Emerging Global Economic Situation: Impact on Trade and Agribusiness in India. Allied Publishers Pvt Ltd, 3-33.

Kumar, Vinod (2020). Growth and Trade Performance of Indian Fisheries: Trends and Constraints. *Working Paper 2020-II*, National Bank for Agriculture and Rural Development, Mumbai.

Kumar, Vinod (2021). Strategies to Improve Performance of Agri-exports. *Writings on Rural Economy: Charting the Way to Rural Prosperity*", National Bank for Agriculture and Rural Development, January 2021 (pp. 28-31).

Kumar, Vinod (2021). Trends and Performance of India's Agricultural Trade in the Midst of COVID-19 Pandemic. *Indian Journal of Agricultural Economics*, 76(3), 352-370.

Kumar, Vinod (2021). Evolving Agricultural Trade Scenario in India. *Indian Journal of Agricultural Economics*, 76(4), 691-692.

Kumar, Vinod (2021). India's Trade of Agricultural Commodities during COVID-19 Pandemic: Performance and Prospects. *Working Paper 2021-2*, National Bank for Agriculture and Rural Development, Mumbai.

National Bank for Agriculture and Rural Development, Various Annual Report.

National Statistical Office (2022). State-wise and Item-wise Value of Output from Agriculture, Forestry and Fishing (2011-12 to 2019-20). MOSPI, GoI, New Delhi.

OECD/Food and Agriculture Organization of the United Nations (2022). Dairy and Dairy Products, in OECD-FAO Agricultural Outlook 2022-2031, OECD Publishing, Paris.

PIB (2022). Ministry of Commerce and Industry. 09 April, 2022, GoI, New Delhi.