EXPORT-IMPORT BANK OF INDIA

WORKING PAPER NO. 61

INTERNATIONAL TRADE IN PROCESSED FOODS: AN INDIAN PERSPECTIVE

March 2017

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Executive Summary

OVERVIEW

Agriculture is the third largest sector of India's economy after services and industry. Although, the contribution of agriculture to overall GDP has declined from approximately 30% in 1990-1991[1] to nearly 17.4% in 2015-16, agriculture is still considered the backbone of the Indian economy. It is in this regard, that the food processing industry is widely recognised as a predominant driver in the process of economic development of the country. Food processing refers to the collection of procedures and methods that lead to the conversion of raw materials to food or cause the alteration of food into other forms of consumption. Food processing technologies are the practices used by the food and beverage industry to transform raw plant and animal material such as grains, meat and milk into products that can be directly consumed by the producers; examples of this can be freezing vegetables, milling wheat into flour and frying potato chips.

The establishment of an effective food processing sector is crucial to ensuring safety, reducing wastage, augmenting value addition, increasing crop diversification and guaranteeing better returns for the farmers.

PROCESSED FOOD: INTERNATIONAL TRADE SCENARIO

The global exports of processed food was estimated at US$ 750.9 billion during the year 2014. Exports have recorded a CAGR of 7.8% during the period 2010 to 2014. The USA was the leading exporter of processed food with exports valued at US$ 62.2 billion (share of 8.3% in global exports) during the year 2014. Germany was the second largest exporter of processed food with a share of 7.7%. India however, held the seventeenth position in the exports of processed food in the world and had a share of just about 2% in the aggregate global exports.The major importers of processed food in the world are the USA (11.5%), Germany (7.3%), the UK (6.2%), Japan (5.7%) and France (5.3%).

Segment-Wise Export Analysis

Fruits and Vegetables

The value of world exports of processed fruits and vegetables was estimated at US$ 66.3 billion during the year 2014, having recorded a CAGR of 6.9% during the period 2010 to 2014. China was the largest producer as well as exporter of fruits and vegetables with its share in global exports estimated at 15.6% during the year 2014. The USA, the Netherlands, Belgium and Italy, with shares of 8.4%, 8.2%, 6.1% and 5.9%, respectively, were other major exporters of processed fruits and vegetables in the world.

As far as imports are concerned, the USA was the leading importer of processed fruits and vegetables in the world during the year 2014, with a share of 13.8% in world imports. Other major importers of processed fruits and vegetables were Germany, France, the UK, Japan and the Netherlands with shares of 10.3%, 7.9%, 6.7%, 6.4% and 5.9%, respectively.

Fishery Products

With a share of 14.6% in world exports, China was the leading exporter of fishery products in the world, followed by Norway (8.3%), Vietnam (6.0%), Thailand (4.9%) and the USA (4.4%). India was the sixth largest exporter, accounting for a share of 4.3% in the aggregate world exports of fishery products.

The USA was the leading importer of fishery products with its share in world imports standing at 16.8% in 2014. Japan was the second largest importer with imports valued at US$ 13.5 billion. Other major importers of fishery products included Spain, China, France and Italy.

Processed Milk, Meat, Poultry and Egg

Milk

The top exporter of dairy products was New Zealand with a share of 14.3%, followed by Germany (13.3%), the Netherlands (10.3%), France (9.7%) and the USA

[1]State of Indian Agriculture (2011-12)

(6.5%). India stood at the thirty fifth position, with a share of 0.4% in global dairy exports during 2014.

As far as imports are concerned, Germany was the leading importer of dairy products in the world with a share of 9.1% in 2014. Other major importers of dairy products were China (7.9%), Italy (6.0%), the UK (5.1%), the Netherlands and France (4.9% each). India had a share of 0.1% in world import of dairy products.

Meat

World exports of meat (bovine, ovine and pig) stood at US$124.8 billion in 2014. USA, with a share of 12.0% in total world exports, was the largest exporter of meat products in 2014, followed by Germany (9.2%), Australia (8.4%), Brazil (7.8%), the Netherlands (6.7%) and Spain (4.7%). India was ranked tenth with a share of 4.0% in global exports of bovine, ovine and pig meat.

Japan was the largest importer of bovine, ovine and pig meat, accounting for 10.1% of the global imports of meat in 2014. Other major importers of meat were the USA (8.0%), the UK (7.0%), Germany (6.9%), Italy (5.6%) and Hong Kong (5.5%).

Poultry and Egg

Brazil was the leading exporter of these products with its share in world exports estimated at 22.2% during the year 2014. Other major exporters of poultry and egg products included the USA (17.1%), the Netherlands (12.8%), Poland (6.1%), Germany (5.0%), Belgium and France (3.6% each). India had the thirty first position in export of poultry and egg, accounting for a mere 0.3% of world exports during the year 2014.

Germany was the leading importer of poultry and egg products during the year 2014, and had a share of 9.4% in the global imports. The UK was the second largest importer with imports aggregating US$ 1.9 billion. Other major importers of these products included Hong Kong, Mexico, the Netherlands, Japan, France, Russia, China and UAE.

PROCESSED FOOD: INDIAN TRADE SCENARIO

During the year 2015-16, the exports of processed food from India stood at US$ 12.9 billion, registering a decline of approximately 17.3% as compared to the previous year. Vietnam was the leading export destination for processed foods from India and occupied a share of 22.6% in the country's aggregate exports. The other major export destinations for Indian processed foods included the USA (15%), UAE (4.8%), Malaysia (4.6%), Saudi Arabia (3.4%), Japan (3.4%), Egypt (3.1%), Thailand (2.5%), the UK (2.1%) and Indonesia (2%).

The imports of processed food from India has been estimated at US$ 1.3 billion during the year 2015-16, with the value of imports being stable as compared to the previous year. The UK with a share of 16.8% in the total imports was the leading import source for processed food in India in 2015-16. The other major import sources were the USA, Nepal, China, Indonesia, France, Singapore, Brazil, Bangladesh and UAE.

Segment-Wise Export Analysis

Fruits and Vegetables

India's export of processed fruits and vegetables were estimated at US$ 856.7 million during the year 2015-16, registering a marginal decline of 4% as compared to the previous year. The USA with a share of 14.4% is the leading export destination for export of processed fruits and vegetables from India. The exports of processed fruits and vegetables to Saudi Arabia during the year 2015-16 was estimated at US$ 81.5 million and it is the second largest export destination of processed fruits and vegetables from India. The Netherlands (8.3%), the UK (8.1%), Germany (5.4%), UAE (5.2%), Russia (3.7%), France (3.65), Belgium (3.4%) and Canada (2.8%) are other significant export destinations of India's processed fruits and vegetables.

India's imports of processed fruits and vegetables were estimated at US$ 99.9 million during the period 2015-16. China is the leading import source of processed fruits and vegetables followed by the USA and Afghanistan.

Fishery Products

India had a significant trade surplus in the fishery and seafood sector, with exports amounting to US$ 4696.6 million and imports worth US$ 67.7 million during the year 2015-16. The USA was the leading importer of

processed fishery and seafood from India and accounted for nearly 28.2% of the aggregate seafood exports from India during 2015-16. Vietnam was the second largest seafood importer with imports of US$ 885.6 million. Other major export destinations of seafood from India included Japan (8.5%), Spain (3.9%), Belgium (3.7%), China (3.1%), UAE (3.0%), the UK (2.9%), Italy (2.7%) and Thailand (2.7%).

Bangladesh was the largest supplier of fishery and seafood products to India during 2015-16. The other significant import sources for fishery products to India included Vietnam, the USA, Myanmar, the UK, Oman, Indonesia, Thailand, Denmark and Singapore.

Processed Milk, Meat, Poultry and Egg

Milk

The exports of dairy products from India were estimated at US$ 115.3 million during the year 2015-16 registering year-on-year decline of 41% as compared to the previous year. UAE, with imports of US$ 27.6 million (23.9% share) was the largest export destination of dairy products from India. Pakistan was the second largest importer of dairy products and had a share of 16.1% in the aggregate dairy products exported from India during 2015-16. Bangladesh, Singapore, Nepal, Bhutan and Afghanistan were other major export destinations for Indian dairy products.

The aggregate imports of dairy products from India during the period 2015-16 was US$ 49 million. France was the leading import source and had a share of nearly 27.5% in the total imports of dairy products. Other significant import sources for dairy products were New Zealand, Denmark, the Netherlands and Uganda.

Meat

India is among the largest exporters of meat in the world and the value of exports during the year 2015-16 was US$ 4201 million. Vietnam was, by far, the leading export destination of meat from India, accounting for 47.4% of the aggregate exports of meat products from India during the year 2015-16. Malaysia, with imports of US$ 410 million was the second largest importer of meat from India. Other leading export destinations of meat from India were Egypt (8.5%), Saudi Arabia (5.8%), UAE (4.4%), Iraq (2.8%), Philippines (2.8%), Algeria (2.7%), Thailand (2.6%) and Kuwait (2.3%).

The imports of meat were estimated at US$ 3.8 million during 2015-16, registering a sharp decline of 28.8% as compared to the previous year. Sri Lanka was the largest import source of meat and meat products for India and its share in India's aggregate imports was 23.2% during the year 2015-16. Other major source countries for imports during the same period were Belgium, New Zealand, Spain, Italy, the UK, Australia, the Netherlands, Germany and Thailand.

Poultry and Egg

Oman was the leading export destination for poultry and eggs from India and had a share of nearly 26.5% of the aggregate poultry and egg exports from India. The value of exports to Oman was approximately US$ 31 million during the year 2015-16. Saudi Arabia, with a share of 12.5%, was the second largest destination of poultry and egg exports from India. Other major export destinations for poultry and egg from India during the year included Japan, Germany, Maldives, Bahrain and Indonesia with shares of 10.5%, 7.6%, 6.9%, 6.4%, and 5.9%, respectively.

As far as imports were concerned, Germany was the predominant source country accounting for a share of 80.5% of India's total imports of poultry and egg during 2015-16.

MAJOR CHALLENGES

Low Productivity of Agricultural Produce

The average productivity of a majority of fruits, vegetables and other agricultural produce is low in India in comparison to the international standards. An increase in agricultural productivity requires the usage of improved varieties of seeds and technology. The productivity growth of crops in India is negatively affected by the sluggish growth in technological advancement coupled with the slow rate of dissemination. The most critical issues in this regard include irrigation and water management, need for increase in quality seed usage, improved disease and pest management and the need to focus on technology which is suited particularly for small and marginal land holdings.

Although, India is the second largest producer of wheat globally, the yield of wheat in India is relatively low when compared to major producers like China, France and Germany and is even lower than the world average which stood at 3289 kg/ha (as against 3029.5 kg/ha for India). India is the second largest producer of rice in the world and contributes approximately 21% of the total production. However, the productivity of rice in India (3622.1 kg/ha) is significantly lesser than the global average (4539 kg/ha).

Irrigation and Water Management Issues

As per statistics, approximately 55 percent of the area under agricultural cultivation in India does not have the provision of irrigational facilities. This in turn increases the risk of crop failure especially in water scarce areas. As per the international norms, a country is classified as Water Stressed and Water Scarce if per capita water availability goes below 1700 m^3 and 1000 m^3, respectively. With 1544 m^3 per capita water availability, India is already a water-stressed country and moving towards turning water scarce[2].

Limited Efforts in Research and Development

The non-availability of appropriate research infrastructure is another obstacle affecting productivity of crops in India. In the Agricultural National Research Systems (NARS), ICAR institutions are facilitated with updated technological advancements, however this is not the case in the zonal research stations which are situated in comparatively remote areas. Moreover, the state agricultural universities face the problem of limited funding, causing impediments in expansion of technological developments. There are also limitations of appropriate documenting and recording of experimental data on crop breeding, management of plant nutrients, weed and soil fertility. There is no systematic and comprehensive compilation of innovations in spheres other than breeding. In Indian Agricultural State Universities, scientists engage themselves in research, teaching as well as extension services, which involves transfers across various centres. This creates hurdles for specialisations in particular fields which impedes the quality of research.

Dearth of Extension Services

Extension service providers are often reported to have limited knowledge related to technology solutions and post-harvest management. The limitations in the efficient functioning of these workers has posed a major hurdle in the growth of agricultural productivity. Inadequate technical support has led to inefficiency in the services of extension workers. It has been noted that research majorly provides generic technical recommendations for problems faced by farmers. However, it cannot be ignored that the natural resource base differs greatly in different parts of the country, and there are various types of farming systems and methodologies of cultivation. The limited amount of human and financial resources also pose a challenge to the extension service provided in the field of agriculture. Extension services are majorly performed by the lower level functionaries of the State Level Directorates, who in spite of being qualified in agriculture, lack the first hand farm level experience and observance and therefore are inefficient in dealing with the farm level problems experienced by the farmers.

Lack of Implementation of Agricultural Marketing Reforms

The provisions of the State Agricultural Produce Marketing Committee Acts prevented the creation of competitive conditions for the sale and distribution of commodities. Moreover, multiple layers of intermediation led to rise in prices. However, during the year 2003, the Central Government formulated a model APMC Act for adoption by the States. While in principle, the model APMC Act provides greater freedom to the farmers to sell their produce directly to the markets set up by the private entities, they are still required to pay market fee to the notified APMCs, even if they provide no services, in addition to the fee charged for providing trading platform and other services like loading, unloading, grading, weighing etc.

Supply Chain Issues in the Food Processing Industry

Limitations in the Quality of Produce

Various farmers in India are not adequately trained and educated which is the leading cause of insufficient attention towards the quality of produce. The limited

[2]Raising Agricultural Productivity and Making Farming Remunerative for Farmers

awareness regarding the modern technological practices and information regarding integrated nutrient management are essential in ensuring the nutritional benefit of the produce.

Packaging, Labelling and Standardisation of Processed Foods

The supply chain of food in India is long and does not involve the usage of modern technology leading to immense wastage and higher chances of contamination prior to delivery. The application of various pesticides are done frequently to enhance the appearance and taste of food leading to a compromise on the quality of food, which ultimately results in them being banned in the international markets. Thus, it is exceptionally important to scan and supervise the hygiene of food across various levels of the food chain. Hence, there is an urgent need for an improvement in the food safety standards and reforms in the food safety laws at all levels of the supply chain to ensure supply of good quality food to the consumers. There have been instances of Indian snacks being rejected because of the usage of certain pesticides which have been banned in the United States, although there is no restriction in their usage in India. One of the major reasons for the rejection of Indian agricultural exports in developed countries has been the imprudent use of fertilisers and pesticides at the farm level and the limited use of good agricultural practices (GAP).

The equipment in the food testing laboratories are not upgraded and the labs themselves are highly understaffed, thereby resulting in inefficiency. Moreover, food testing laboratories often face the pressure of approval by the food packaging and processing companies.

Another obstacle with regard to food safety is that the nodal agency for food safety in India, FSSAI, can regulate the domestic market and imports, but does not monitor exports. As a result, FSSAI does not engage in ensuring traceability of food products from the farm level to the consumer.

Inadequate and Inefficient Cold Chain Infrastructure

The absence of appropriate cold chain facilities can lead to substantial food wastage and losses to the firm. Cold chain infrastructure involves the storage and transportation of food, ensuring an augmentation in its shelf life and maintenance of its quality. It includes both storage as well as transportation of food under optimal temperature conditions in order to prevent spoilage and preserve the nutritional value and freshness of food items.

In India, a considerable quantity of fruits, vegetables and other perishable food items are wasted owing to lack of appropriate cold storage facilities. Most of the cold chains in the country are concentrated in the states of Uttar Pradesh, West Bengal, Maharashtra and Punjab. Furthermore, these cold chains are designed for single commodity such as potato and banana leading to ineffective capacity utilization.

Wastage of Agricultural Produce

In the food processing supply chain, post-harvest losses can be enormous and can occur at various stages of the supply chain including in the field, while transportation, in processing and packaging, and even while storage, as well as in the wholesale and retail markets. The post-harvest losses of agricultural produce requires utmost attention in India. According to the study by the Central Institute of Post-Harvest Engineering and Technology (CIPHET), the wastage levels of food in India are significantly high (4.6%-15.9% in fruits, 5.2% in inland fish, 10.5% in marine fish, 2.7% in meat and 6.7% in poultry).

Infrastructural and Logistics Issues

A major movement of agri produce happens by road transport which continues to have infrastructural issues. There is a problem of congestion in national highways and the capacity to handle vehicles carrying bulky and heavy goods is less. Moreover, there are problems of connectivity which are exacerbated by high logistics cost and inappropriate fleet management. On various occasions, the delivery is not timely which adds to the existing challenges.

Need for Production of Value- added Agri Produce, meeting International Demand

There is a requirement for the food supply chain to be adaptive in accordance to consumer demands.

Globally, countries are into the practice of sourcing raw materials from India, while they engage in processing in their respective country, which has been the case in tea, spices and various other commodities. Moreover, India imports certain finished goods such as processed juices and oils, which could possibly be prepared by using domestic resources. It is imperative that there is a change in focus for the food processing industry. Indian food processors undertake production of low value added produce with the objective of meeting the demands of the domestic market. Nevertheless, the food processing industry should aim to produce globally suited value added products in order to increase exports and bring about a rise in earnings.

Limitations of Finance

The establishment of a food processing unit is capital intensive caused by the considerable initial capital requirement. The requirement of working capital in these industries is also high owing to the volatility in the availability of raw materials caused by seasonal factors. The RBI has classified loan to food and agro based processing units and cold chain under agriculture activities for Priority Sector Lending subject to aggregate sanctioned limit of INR 100 crore per borrower from the banking system, in order to encourage the setting up of food processing units. However, the procedural hurdles involved in obtaining credit from financial institutions acts as a drawback in the development of the industry.

Tax Structure

The high rates of taxation makes agri produce less competitive in domestic as well as the global market. The heavy excise duties and exorbitant rates of taxation require attention. Multiple taxes are levied on agricultural commodities in different states in the form of market fee, sales tax etc. It is imperative that the processed food from India should be reasonably priced through the rationalization of tax regime. Implementation of GST is expected to address this issue.

Limited Availability of Skilled Manpower

It is the dearth of skilled specialists which create an obstacle in the process of product development and innovation in the food processing industry. The limited availability of quality control specialists has led to agricultural products from India being rejected in the global markets. There is a mismatch between the supply and demand of skilled professionals, which needs to be addressed in order to enhance India's competence in the food processing sector.

The availability of profitable job opportunities in other sectors has led to a paucity of number of professionals available for the food processing sector. For the smooth operation of the food processing industry, there is an urgent requirement of efficient technicians, manpower skilled in marketing as well as supply chain and logistics managers. This will ensure efficacy in operations across the entire value chain in the food processing industry. There is need to introduce more courses specializing in food processing which train the employees keeping into account the industry demand, with enhanced emphasis on research and development and qualifications on technology and innovations.

Insufficient Innovation

Given the significance of research and development in the food processing industry, there is a need for enhanced focus in the area. This would require capitalizing on the science and technology investments that are already in place. Modern technology is a necessary requirement for ensuring the safety of nutritional quality of food and the value addition in the processing of food products. The utilization of technology in sectors such as processing, warehousing, logistics and other segments of the supply chain in India remains low as compared to other economies of the world. When food chain is unorganised, the application of poor technology leads to a decline in the nutritive value of food, thus making it unsuitable for exports. This, therefore calls for increased investments in R&D and technology in the food processing industry.

STRATEGIES

Augmenting Productivity through Greater Technology Intervention

The yield of crops in India is negatively affected by the sluggish growth in technological advancement coupled with the slow rate of knowledge dissemination. The sophistication of today's sensors, internet-enabled

devices, software applications, and cloud data storage facilities allow vast amounts and types of data to be captured, stored, managed, and fed into decision-support tools to guide business decisions.

Mobile phones are being used in countries like Ghana, Kenya, Nigeria and Thailand for the proliferation of information on the appropriate fertiliser variety, prices of crops and inputs and forecast weather conditions. These have proved very beneficial to increase productivity of crops and farmers income. Drones could also be put to use by the State Agricultural Universities to disseminate important information on pest control, apt methods of irrigation and integrated nutrient management.

Strengthening Research Institutes

Significant reforms in agricultural research and extension services are crucial for the development of agro and agro processed industry in India. The most critical issues in this regard include irrigation and water management, the need for increase in quality seed usage, improved disease and pest management and the need to focus on technology which is suited particularly for small and marginal holdings. These could be made possible by dedicated investment for the development of infrastructure for agricultural research and education. The research outcomes amongst the scientist may be enhanced by incorporating performance indicators. Incentives should be given to the private sector to participate in the innovation process, which could lead to research in high yielding variety of seeds.

Human Resource Development

There is a need for imparting training on pre-harvest and post-harvest management practices in a crop-specific and location-specific manner to facilitate higher farm yields and better storage/transportation/quality of the produce. The institutions engaged in this field need to work more proactively with the Ministry of Food Processing Industries towards introducing food processing curriculum in the State educational system. Training should be focussed on modern techniques of farming and product marketing. Curriculum could also include a compulsory field work in spreading the learnings to village panchayats and farmers.

Managing Non-tariff Measures

Many agricultural produce, either raw or processed, face a number of such NTBs across the world. This is largely because of the lack of harmonization of standards of products, stringent quarantine procedures, mandatory labelling and packaging, different minimum residual limits prescribed by countries for pesticides, drugs and other contaminants, including dispute with regard to definitions (for example, in the case of whisky). In fact, according to ITC, the sectors with the highest numbers of technical regulations per imported product and the highest share of imports subject to such regulations are fresh and processed food[3]. 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. Countries should be encouraged to base their domestic technical regulations or standards on those developed by international organizations, including the Joint FAO/WHO Codex Alimentarius Commission (Codex) for food safety; the Office International des Epizooties (OIE) for animal health; and the International Plant Protection Convention (IPPC) for plant health.

Adopting Good Agricultural Practices (GAP)

The cost compliance for SPS measures have resulted in greater gains to the exporters in India allowing them market access. Therefore, the government needs to encourage compliance to international standards and help the exporters with the needed facilities. The government needs to create means and mechanisms to upgrade the national system for testing, certification and laboratory accreditations in order to meet the global trade demands. At the same time exporters must learn to supply safe products and to defend their interests in transparent, equivalence standards.

Enhanced Emphasis on Packaging

The retailers can utilize the advantages being offered by innovative forms of packaging such as active packaging and smart tagging. In this regard, APEDA and other relevant agencies could make provisions of financial assistance, for small and medium sized exporters

[3]Meeting the Standard For Trade, ITC

to undertake short term courses on food packaging provided by reputed institutes like Indian Institute of Packaging (IIP). While APEDA has been working with Indian Institute of Packaging, the collaboration could be further augmented to train exporters about packaging and labelling trends prevalent in international markets.

Cold Chain Infrastructure

It is essential that at the producer stage, the farmers should be aware of the importance of cold chain infrastructure and how that would link the farmers to the value chain. There should be an increase in the extension services imparting knowledge in this regard. Not only among farmers, but also among all value chain actors including consumers and policy makers, the importance of cold chain in maintaining food safety and quality, and preserving its economic value should be inculcated. In this regard, the Ministry of Food Processing Industries under the Scheme for Cold Chain, Value Addition and Preservation Infrastructure provides financial assistance at the rate of 50% of the total cost of plant and machinery and technical civil work in general areas, and 75% for the North Eastern Region. Such programs should be widely advertised by APEDA for greater usage as a part of their knowledge dissemination exercise.

Focus on Food Safety

It is essential for all the participants of the food supply chain including the farmers, manufacturers as well as the retailers to put in coordinated efforts to enforce food safety. There is a need to set up a robust system for the purpose of ensuring compliance with the regulatory regime in regions where the food product is being consumed. An effective track and trace system is indispensable in maintenance of food quality, which is possible only when there is transparent communication facilitation among members of the supply chain, who should also be aware of the hazards accompanying the quality failure in food.

Moreover, increasing the number of standards and aligning them with the international standards like Hazard Analysis and Critical Control Points (HACCP), would help the food processing industry flourish. The Government through its various agencies could consider conducting more training programs with the aim of a betterment in food standards, which will guarantee food safety.

Promoting Synergy among Different Export Promotion Organisations

There is a need for synergising the activities of various export promotion organisations such as Agricultural and Processed Food Products Export Development Authority (APEDA), the Marine Products Export Development Authority (MPEDA), the Coffee Board, the Tea Board, the Spices Board, the Cashew Export Promotion Council, and the Export Inspection Council, in such a manner that the collaborative efforts can be undertaken with the objective of augmenting exports. A synchronised approach will help in India garnering greater share in agricultural and processed food exports.

Strategizing Geographical Location for Food Processing

The location of food processing industries can be selected taking into account the vicinity of logistics centre and port. In this regard, initiatives are already being taken – for instance, as a part of the Sagarmala Programme of the Ministry of Shipping, two mega food park projects are being implemented in Kakinada, Andhra Pradesh and Satara, Southern Maharashtra by the Ministry of Food Processing Industry. These projects are tactically placed in the Coastal Economic Zone in close proximity to the port with the aim of augmenting export of processed food from India. Moreover, there should be provision of green channel at airports and seaports for horticultural items. The introduction of international flights to and from Amritsar and Chandigarh would allow the smooth flow of horticultural produce in Punjab to the Gulf countries.

Conjunctive Management of Water

Conjunctive management could be a very successful tool in water management for irrigation. It refers to the integrated and joint management of rainwater, surface water, wastewater, and groundwater resources for optimal socio-economic and environmental outcomes at the level of aquifer and irrigation system or a river basin. Conjunctive use refers to integrated use of surface and groundwater at the farm level.

Conjunctive management works through structures and processes that guide individual water users to undertake conjunctive use. Conjunctive management is an important opportunity for increasing irrigation efficiency in India and prevent groundwater depletion, avoid farm-power subsidies, alleviate drought and dry spells, and reduce water quality deterioration.

Need for Improved Extension Services

There is need of more specialized services like marketing intelligence, price forecasting, soil testing, customized fertilizer, foliar nutrition services, mobile based extension, etc. Guided by private extension, farmers can become more export oriented and focused. Advanced extension services will also help in price discovery for undertaking food processing and thereby determine what could be the best produce to be engaged in.

Improved Storage can Prevent Wastage of Agri-Products

There is a need to adopt best warehousing practices for a robust supply chain management for agriculture products. According to NITI Aayog, the estimated gap between agri-warehousing supply and demand is 35 million tonnes. There is also an urgent need to spruce up both road and rail connectivity. This will ensure that farm produce can be transported across the length and breadth of the country in a more secure environment and in quick time, thereby ensuring minimal impact on the quality of the produce. There is also a need for a sustained campaign to improve existing storage spaces and introduce technology to make the entire supply chain smooth, transparent and mobile to ensure quality, timely delivery, right price and minimal losses.

Clear-cut Agri Trade Policy

Emphasis should be laid towards formulating a focussed agri export policy, as even in the case of free trade agreements and regional trade agreements, agricultural trade is largely overlooked. While a focussed agri-export policy is needed, even a stable agri-export policy has not been formulated[4]. Measures should be taken in this regard, to ensure hassle free provision of credit, adherence to sanitary and photo sanitary conditions of export markets and the availability of appropriate infrastructure and marketing facilities. The mind-set of the farmers should be changed from subsistence and domestic oriented farming to export oriented farming.

[4]Reviving Accelerating India Export Issues

1. Introduction

India is a richly endowed agricultural nation. It has nearly a tenth of world's arable land and a fifth of world's irrigated land. The country has all major climates, enjoys long sunshine hours, fairly good rainfall which are ideally suited for round the year cultivation.

All these in a way contribute towards making agriculture as the third largest sector of India's economy behind the services and industry sector. Although, the contribution of agriculture to overall Gross Domestic Product (GDP) has declined from approximately 30% in 1990-1991[5] to nearly 17.4% in 2015-16, the sector is still considered the backbone of the Indian economy. With nearly 58% of India's population engaged in agriculture, it is essentially the principal means of livelihood. Besides, this sector also has a significant amount of backward or forward linkages, which contributes substantially to production, employment and demand generation. Overall, the sector plays a significant role in alleviating poverty and ensuring sustainable development of the economy.

According to Food and Agriculture Organisation (FAO), during the year 2014, India was the third largest producer of wheat globally with the quantity of production estimated at 95.9 million tonnes. Its share in global wheat production was estimated at 13% during this period. In addition, India is the fifth largest producer of coarse grains globally with its production estimated at 42 million tonnes in 2014 (a share of 3.2% in global production of coarse grains). India is also the second largest producer of rice globally, behind China. The quantity of production during the year 2014 was estimated at 104.8 million tonnes, accounting for approximately 21% of the aggregate rice production in the world. Besides, India is the second largest producer of fruits and vegetables in the world. India is also the leading producer of bananas, papayas, mangoes and guavas, and the second largest producer of potatoes, green peas, tomatoes, cabbage and cauliflower.

Food Processing

Food processing predominantly refers to the collection of procedures and methods that lead to the conversion of raw materials to food or cause the alteration of food into other forms of consumption. Hence, food processing chiefly includes the blending of raw food ingredients to produce food products that are marketable, easy to cook and have a long shelf-life. On the other hand, food processing technologies are the practices that are used by the food and beverage industry to transform raw plant and animal material such as grains, meat and milk into products. This in turn can be directly consumed by the producers, for example frozen vegetables, flour and potato chips.

As per the Ministry of Food Processing Industries, the process of food processing includes the following:

- Manufacturing Process: If any raw product of agriculture, animal husbandry or fisheries is transformed through a process (involving employees, power, machines or money) in such a way that its original physical properties undergo a change and the transformed product is edible and has commercial value.
- Value- Added Process: If the product has undergone significant value-addition (increased shelf life, shelled and ready for consumption etc.).

The areas being looked into by Ministry of Food Processing Industries are as follows:-

- Processing and refrigeration of certain agricultural products like milk powder, infant milk food, malted milk food, condensed milk, ghee and other dairy products, poultry and eggs, meat and meat products.
- Processing of fish (including canning and freezing)
- Establishment and servicing of development council for fish processing industries
- Technical assistance and advice to fish processing industry
- Fruit and vegetable processing industry (including freezing and dehydration) and
- Food grains milling industry

[5]State of Indian Agriculture (2011-12)

A strong and dynamic food processing sector plays a vital role in diversification and commercialization of agriculture, enhances shelf life, ensures value addition to the agricultural produce, generates employment, enhances income of farmers and creates markets for export of agro foods. Food processing helps the farmers to get better returns, higher yields and lowers the risk of perishability. The growth of food processing sector can make significant contribution to the Indian Economy not only in economic terms but also in meeting the objectives of 'inclusive growth' and 'food security'. Significant opportunities are, however, yet to be tapped in the areas of supply chain management, cold storage, financing retails and exports.

Value Chain

Food processing includes various value additions that are incorporated to the agricultural produce beginning from the harvest stage, till making it available to the end user for consumption or offering it as an industrial raw material for the manufacturing industries. This process assists in increasing the shelf life of agro products.

It may also be noted that the global agricultural markets are increasingly becoming complex because of the concentration at all points in the value chain and the increasing scope and complexity of food standards, particularly those relating to food safety.

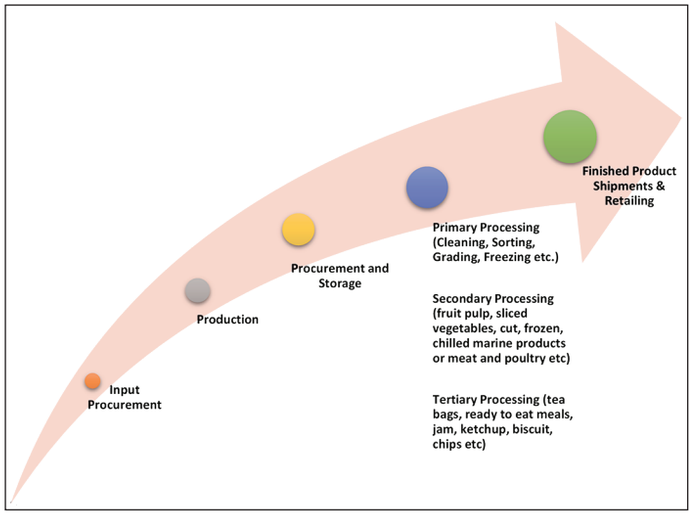
And hence, the establishment of an effective food processing sector with high levels of processing is extremely crucial to ensuring safety, reducing wastage, while augmenting value addition, increasing crop diversification and warranting better returns to farmers and increasing export opportunities. The food processing industry therefore remains vital in providing solutions to the issues of food security and food inflation as it ensures the provision of nourishing food.

The Study

This Study makes an attempt to analyse the production and trade data of processed fruits and vegetables, fishery and seafood, meat and poultry products, amongst others. An effort has also been made to analyse India's position and potential in the global markets.

Given the resource endowment, India has the potential to become one of the largest food processing countries in the world. Potential for production is also matched by strong domestic demand for processed food products due to rapid urbanization, change in preferences and practices in consumption. However, there remains some challenges which the sector has been facing. Meeting the market requirements for agribusiness products has become more challenging in recent years. The Study has elucidated such challenges while recommending select strategies which could help the food processing sector realise its full potential and become a global player.

Exhibit 1.1: Key Processes in Value Chain of Food Processing Industry



Source: Ministry of Food Processing Industries, Govt. of India

2. Global Scenario

The global food processing industry has experienced massive development over the years, and has huge potential for further growth. Globally, the demand for processed food is on the rise caused by an increase in urbanisation and augmentation in the disposable income of consumers worldwide. Food and beverage e-commerce sales is another developing trend in the food retail sector, which presents a tremendous opportunity to meet the demands of the time-pressed urban consumer.

GLOBLE TRADE OF PROCESSED FOODS

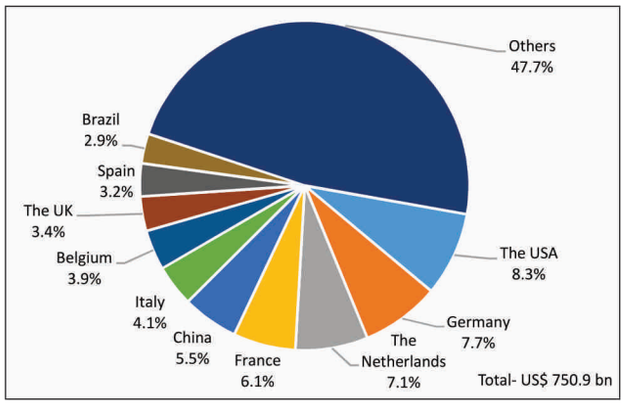
Table 2.1: Major Exporters of Processed Food

Rank	Country	2010	2014	CAGR	Share
		US$ bn		%	
1	The USA	41.8	62.2	10.5	8.3
2	Germany	44.4	58.0	6.9	7.7
3	The Netherlands	38.1	53.5	8.8	7.1
4	France	38.5	46.1	4.6	6.1
5	China	28.0	41.5	10.3	5.5
6	Italy	23.9	30.5	6.2	4.1
7	Belgium	23.3	29.5	6.1	3.9
8	The UK	19.1	25.4	7.3	3.4
9	Spain	17.9	24.2	7.9	3.2
10	Brazil	17.8	22.0	5.3	2.9
17	India	5.9	15.2	26.5	2.0
	World	**555.6**	**750.9**	**7.8**	**100.0**

Source: ITC Geneva; Exim Bank Research

The global exports of processed food was estimated at US$ 750.9 billion during the year 2014. Exports have recorded a CAGR of 7.8% during the period 2010 to 2014. The USA was the leading exporter of processed food with exports valued at US$ 62.2 billion (share of 8.3% in global exports) during the year 2014. Germany was the second largest exporter of processed food with a share of 7.7%. India held the seventeenth position in the exports of processed food in the world and had a share of just about 2% in the aggregate global exports (Table 2.1).

Exhibit 2.1: Major Exporters of Processed Food in the World (2014)



Source: ITC Geneva; Exim Bank Research

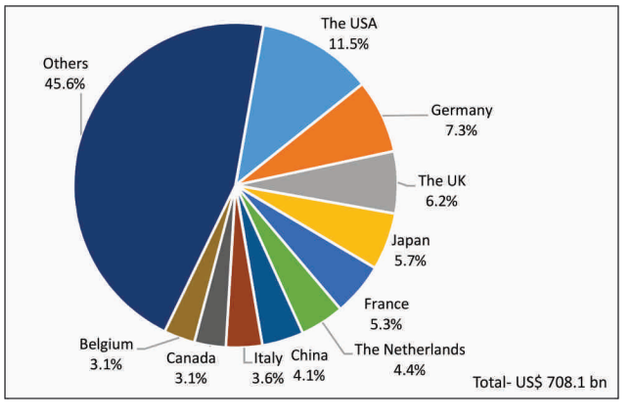
The USA was also the leading importer of processed food in the world, accounting for 11.5% of global imports during 2014. Other major importers of processed food in the world included Germany (7.3%), the UK (6.2%), Japan (5.7%), France (5.3%), the Netherlands (4.4%), China (4.1%), Italy (3.6%), Canada (3.1%) and Belgium (3.1%) (Table 2.2).

Table 2.2: Major Importers of Processed Food

Rank	Country	2010	2014	CAGR	Share
		US$ bn		%	
1	The USA	57.3	81.6	9.2	11.5
2	Germany	41.5	51.9	5.8	7.3
3	The UK	36.1	43.8	4.9	6.2
4	Japan	36.3	40.4	2.7	5.7
5	France	31.2	37.4	4.7	5.3
6	The Netherlands	22.0	31.1	9.1	4.4
7	China	14.0	29.4	20.3	4.1
8	Italy	22.9	25.7	2.9	3.6
9	Canada	16.5	22.2	7.7	3.1
10	Belgium	16.8	21.9	6.9	3.1
	World	**537.7**	**708.1**	**7.1**	**100.0**

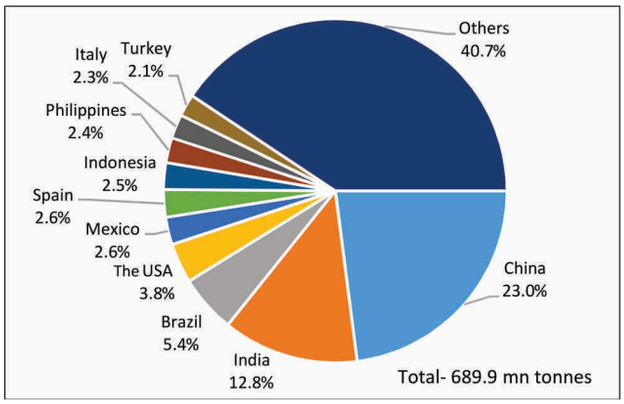
Source: ITC Geneva; Exim Bank Research

Exhibit 2.2: Major Importers of Processed Food in the World (2014)



Source: ITC Geneva; Exim Bank Research

Exhibit 2.4: Major Producers of Fruits in the World (2014)



Source: FAO; Exim Bank Research

FRUITS AND VEGETABLES

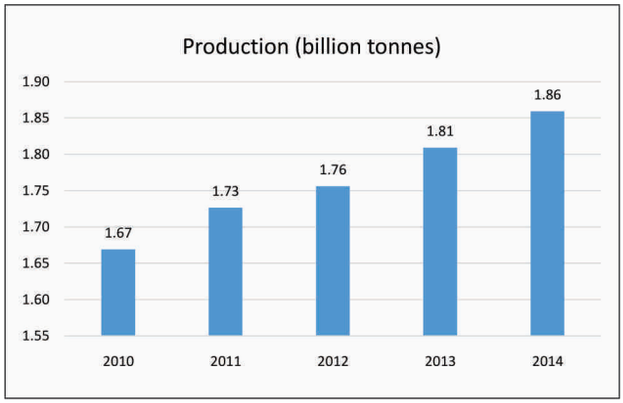
Production

The global production of fruits and vegetables during the year 2014 was estimated at 1.9 billion tonnes. The production of fruits and vegetables recorded a CAGR of 2.7%, as the quantity of production increased from 1.67 billion tonnes in 2010 to 1.86 billion tonnes in 2014. The aggregate production of fruits and vegetables increased at a year-on-year rate of 2.8% during the year 2014 (Exhibit 2.3).

The aggregate fruit production in the world during the year 2014 was estimated at 689.9 million tonnes. China was the leading producer of fruits globally, with a production of 158.4 million tonnes. India was the second largest producer accounting for a share of 12.8% of global production. Brazil (5.4%), the USA (3.8%), Mexico (2.6%), Spain (2.6%), Indonesia (2.5%), Philippines (2.4%), Italy (2.3%) and Turkey (2.1%) were the other major producers of fruits globally (Exhibit 2.4).

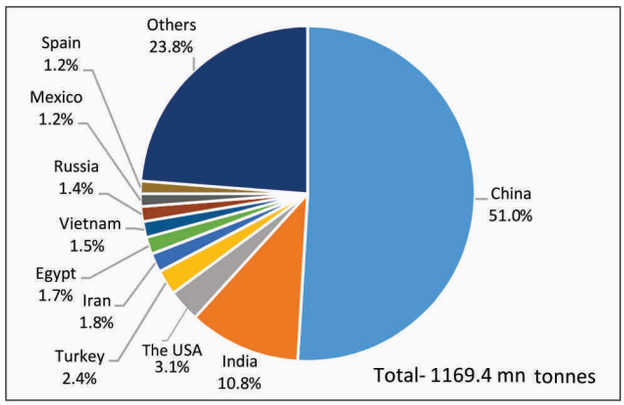
The total vegetable production in the world during the year 2014 stood at 1169 million tonnes. China was the largest producer of vegetables in the world with the quantity of vegetables produced aggregating to approximately 596.1 million tonnes. India was the second largest producer of vegetables globally and accounted for a share of 10.8% in the global vegetable production. Other major producers of vegetables in the world were the USA (3.1%), Turkey (2.4%), Iran (1.8%),

Exhibit 2.3: Global Production of Fruits and Vegetables



Source: FAO; Exim Bank Research

Exhibit 2.5: Major Producers of Vegetables in the World (2014)



Source: FAO; Exim Bank Research

Egypt (1.7%), Vietnam (1.5%), Russia (1.4%), Mexico (1.2%) and Spain (1.2%) (Exhibit 2.5).

Trade

The value of world exports of processed fruits and vegetables was estimated at US$ 66.3 billion during the year 2014, having recorded a CAGR of 6.9% during the period 2010 to 2014. China was the largest producer as well as exporter of fruits and vegetables with its share in global exports estimated at 15.6% during the year 2014. The USA, the Netherlands, Belgium and Italy, with shares of 8.4%, 8.2%, 6.1% and 5.9%, respectively, were other major exporters of processed fruits and vegetables in the world. India, in spite of being the second largest producer of fruits and vegetables, held the 18th position in the exports of processed fruits and vegetables, and accounted for a minor share of 1.3% in the world exports in 2014 (Exhibit 2.6).

The USA was the leading importer of processed fruits and vegetables in the world during the year 2014, with a share of 13.8% in world imports. Other major importers of processed fruits and vegetables were

Table 2.3: Major Exporters of Processed Fruits and Vegetables

Rank	Country	2010	2014	CAGR	Share
		US$ mn		%	
1	China	7682	10333	7.7	15.6
2	The USA	4093	5591	8.1	8.4
3	The Netherlands	4078	5469	7.6	8.2
4	Belgium	3354	4064	4.9	6.1
5	Italy	3273	3943	4.8	5.9
6	Spain	2624	3608	8.3	5.4
7	Germany	2402	3189	7.3	4.8
8	Turkey	1851	2459	7.4	3.7
9	Brazil	2024	2299	3.2	3.5
10	France	1844	2210	4.6	3.3
18	India	587	872	10.4	1.3
	World	**50831**	**66305**	**6.9**	**100.0**

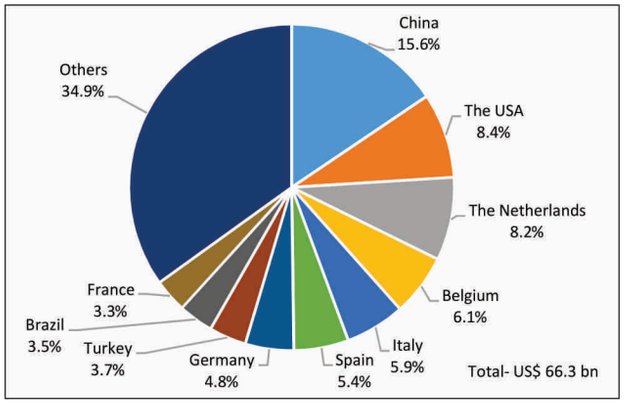
Source: ITC Geneva; Exim Bank Research

Table 2.4: Major Importers of Processed Fruits and Vegetables

Rank	Country	2010	2014	CAGR	Share
		US$ mn		%	
1	The USA	6111	8610	8.9	13.8
2	Germany	5100	6421	5.9	10.3
3	France	3997	4926	5.4	7.9
4	The UK	3350	4212	5.9	6.7
5	Japan	3493	4019	3.6	6.4
6	The Netherlands	2598	3659	8.9	5.9
7	Belgium	1922	2838	10.2	4.5
8	Canada	1887	2623	8.6	4.2
9	Italy	1474	1754	4.4	2.8
10	Russia	1612	1712	1.5	2.7
70	India	50	67	7.6	0.1
	World	**47807**	**62527**	**6.9**	**100.0**

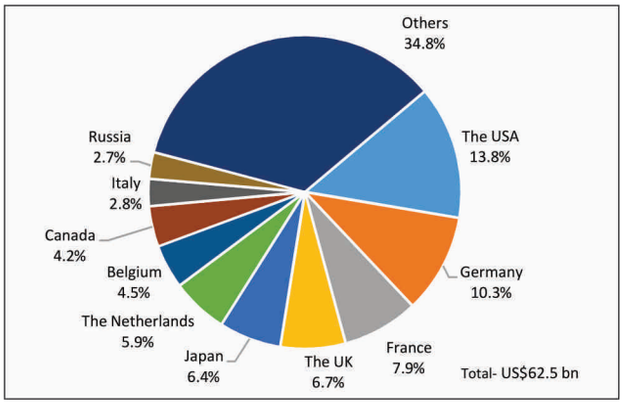
Source: ITC Geneva; Exim Bank Research

Exhibit 2.6: Major Exporters of Processed Fruits and Vegetables in the World (2014)



Source: ITC Geneva; Exim Bank Research

Exhibit 2.7: Major Importers of Processed Fruits and Vegetables in the World (2014)



Source: ITC Geneva; Exim Bank Research

Germany, France, the UK, Japan and the Netherlands with shares of 10.3%, 7.9%, 6.7%, 6.4% and 5.9%, respectively. Among the leading importers of processed fruits and vegetables, Belgium recorded the highest CAGR of 10.2% during the period 2010 to 2014 (Exhibit 2.7).

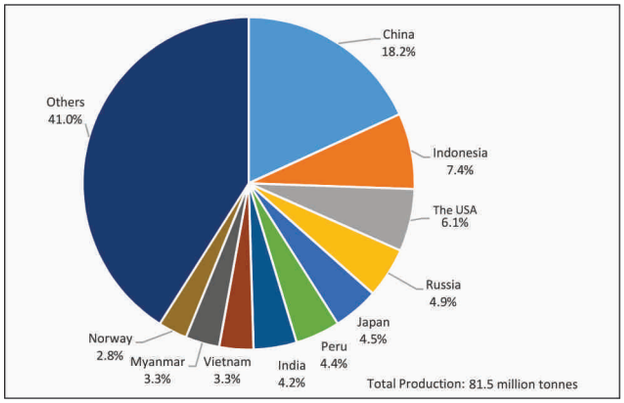
FISHERY PRODUCTS

Production

As per FAO, the global production of capture fishery and aquaculture during the year 2014 was estimated at 167.2 million tonnes, experiencing a growth of nearly 2.6% over the previous year.

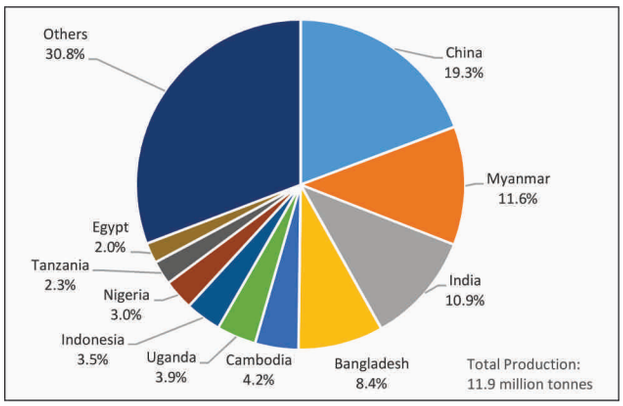
The aggregate global capture fishery production during 2014 was approximately 93.4 million tonnes, of which 81.5 million tonnes were from marine waters and 11.9 million tonnes constituted production from inland waters. In the case of marine fishery production, China was the leading producer and accounted for approximately 18.2% of the global marine capture fishery production. Other major producers of marine capture fishery production included Indonesia (7.4%), the USA (6.1%), Russia (4.9%) and Japan (4.5%). India was the seventh largest producer of marine capture fishery production in 2014 (Exhibit 2.8). As far as inland water capture was concerned, China accounted for 19.3% of the aggregate production and was the leading producer globally during the year 2014. Other producers of inland water capture production included Myanmar (11.6%), India (10.9%), Bangladesh (8.4%) and Cambodia (4.2%) (Exhibit 2.9).

Exhibit 2.8: Major Producing Countries of Marine Capture Fishery in the World (2014)



Source: The State of World Fisheries and Aquaculture 2016; Exim Bank Research

Exhibit 2.9: Major Producing Countries of Inland Capture Fishery in the World (2014)



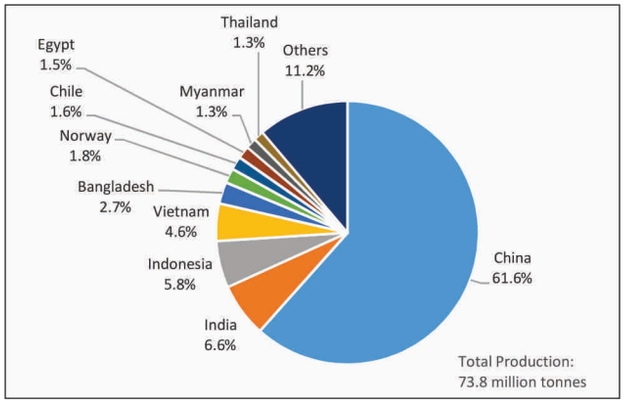
Source: The State of World Fisheries and Aquaculture 2016; Exim Bank Research

The global aquaculture production of fishery during the year 2014 was estimated at 73.8 million tonnes, registering a CAGR of 5.8% during the period 2010 to 2014, as it rose from 59 million tonnes to 73.8 million tonnes. China accounted for approximately 61.6% of the aggregate aquaculture production in the world during 2014. India was the second largest producer of aquaculture fishery with the quantity of production estimated at 4.8 million tonnes (Exhibit 2.10).

Trade

World exports of fishery products during the year 2014 were estimated at US$ 127.2 billion. The value of exports recorded a CAGR of 8% during the period 2010

Exhibit 2.10: Major Producing Countries of Aquaculture Fishery in the World (2014)



Source: The State of World Fisheries and Aquaculture 2016; Exim Bank Research

to 2014. China was the leading exporter with a share of 14.6% in world exports. Norway (8.3%), Vietnam (6.0%), Thailand (4.9%) and the USA (4.4%) were other major exporters of fishery products. India was the sixth largest exporter, accounting for a share of 4.3% in the aggregate world exports of fishery products (Exhibit 2.11).

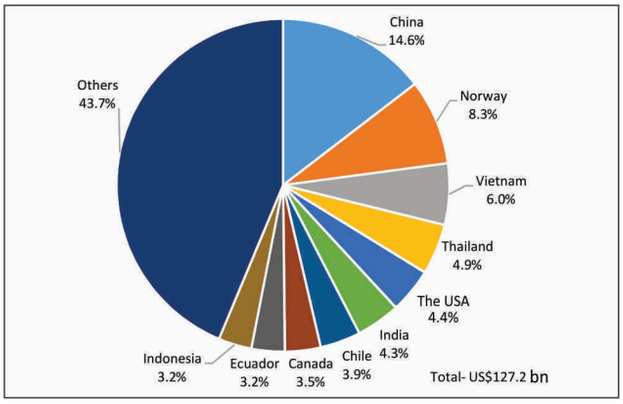
The USA was the leading importer of fishery products with its share in world imports standing at 16.8% in 2014. With a CAGR of 9.8% during 2010-2014, the country also witnessed the third fastest increase in imports of fishery products among the major importing countries.

Table 2.5: Major Exporters of Fishery Products

Rank	Country	2010	2014	CAGR	Share
		US$ mn		%	
1	China	11715	18563	12.2	14.6
2	Norway	8607	10542	5.2	8.3
3	Vietnam	4858	7597	11.8	6.0
4	Thailand	6764	6270	-1.9	4.9
5	The USA	4272	5571	6.9	4.4
6	India	2326	5438	23.7	4.3
7	Chile	2602	5014	17.8	3.9
8	Canada	3741	4403	4.2	3.5
9	Ecuador	1674	4121	25.3	3.2
10	Indonesia	2437	4113	14.0	3.2
	World	**93633**	**127272**	**8.0**	**100.0**

Source: ITC Geneva; Exim Bank Analysis

Exhibit 2.11: Major Exporters of Fishery Products in the World (2014)



Source: ITC Geneva; Exim Bank Analysis

Japan was the second largest importer with imports valued at US$ 13.5 billion. Other major importers of fishery products included Spain, China, France and Italy. Among the leading importers of fishery products, China had recorded the highest CAGR of approximately 10.9% followed by Sweden with a CAGR of 10.2% during the period 2010 to 2014 (Exhibit 2.12).

MILK, MEAT, POULTRY AND EGG

Milk

Production

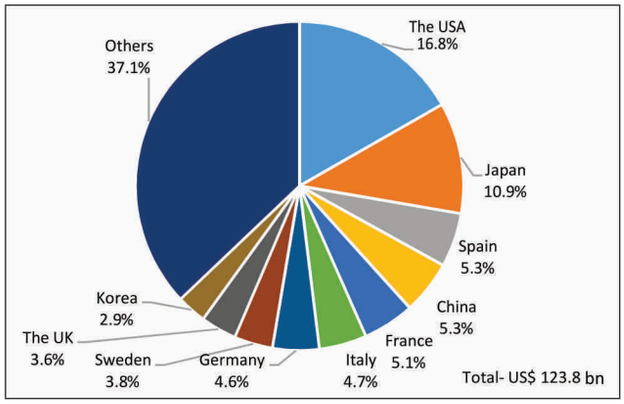
The total world production of milk was estimated at 801.6 million tonnes in 2014, experiencing an increase

Table 2.6: Major Importers of Fishery Products

Rank	Country	2010	2014	CAGR	Share
		US$ mn		%	
1	The USA	14292	20747	9.8	16.8
2	Japan	13329	13544	0.4	10.9
3	Spain	6222	6581	1.4	5.3
4	China	4318	6523	10.9	5.3
5	France	5618	6302	2.9	5.1
6	Italy	5110	5810	3.3	4.7
7	Germany	4210	5683	7.8	4.6
8	Sweden	3190	4699	10.2	3.8
9	The UK	3469	4397	6.1	3.6
10	Korea	2660	3609	7.9	2.9
84	India	48	53	2.5	0.04
	World	**96372**	**123760**	**6.5**	**100.0**

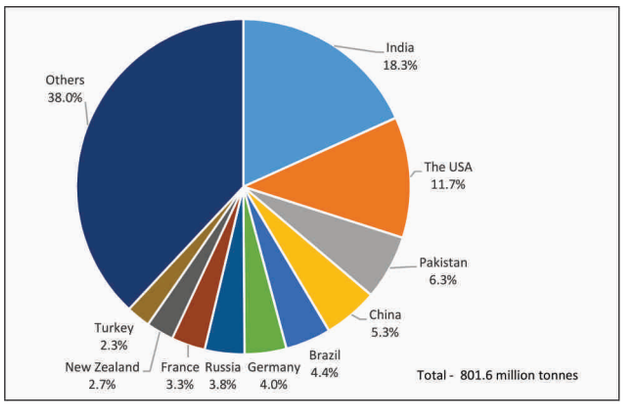
Source: ITC Geneva; Exim Bank Analysis

Exhibit 2.12: Major Importers of Fishery Products in the World (2014)



Source: ITC Geneva; Exim Bank Research

Exhibit 2.13: Major Milk Producing Countries in the World (2014)



Source: FAO; Exim Bank Research

of 3.5% over the previous year. India was the largest producer of milk accounting for 18.3% of the world production. Other major producers were the USA (11.7%), Pakistan (6.3%), China (5.3%), Brazil (4.4%) and Germany (4.0%) (Exhibit 2.13).

Trade

World exports of dairy products amounted to US$ 83.7 billion during the year 2014, recording a CAGR of 8.7% during the period 2010 to 2014. The top exporter was New Zealand with a share of 14.3%, followed by Germany (13.3%), the Netherlands (10.3%), France (9.7%) and the USA (6.5%). India stood at the thirty fifth position, with a share of 0.4% in global dairy exports during 2014 (Exhibit 2.14).

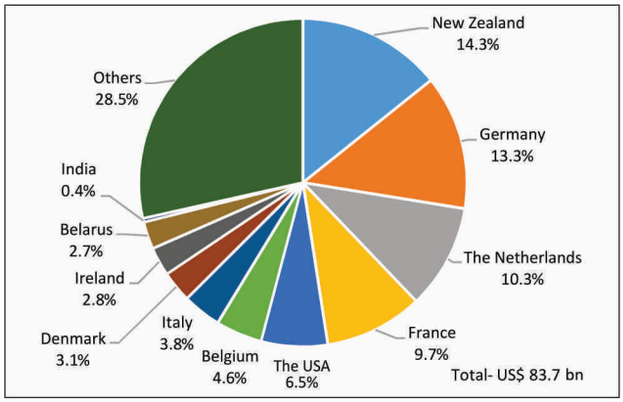
Table 2.7: Major Exporters of Dairy Products

Rank	Country	2010	2014	CAGR	Share
		US$ mn		%	
1	New Zealand	7248	11928	13.3	14.3
2	Germany	8198	11110	7.9	13.3
3	The Netherlands	6090	8620	9.1	10.3
4	France	6445	8125	6.0	9.7
5	The USA	2777	5471	18.5	6.5
6	Belgium	3144	3841	5.1	4.6
7	Italy	2472	3200	6.7	3.8
8	Denmark	2302	2563	2.7	3.1
9	Ireland	1837	2369	6.6	2.8
10	Belarus	1464	2263	11.5	2.7
35	India	101	301	31.4	0.4
	World	**59903**	**83668**	**8.7**	**100.0**

Source: ITC Geneva; Exim Bank Analysis

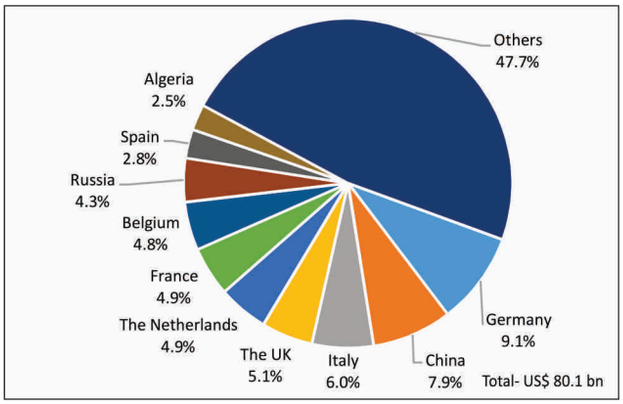
As far as imports are concerned, Germany was the leading importer of dairy products in the world with a share of 9.1% in 2014. Other major importers of dairy products were China (7.9%), Italy (6.0%), the UK (5.1%), the Netherlands and France (4.9% each). India

Exhibit 2.14: Major Exporters of Dairy Products in the World (2014)



Source: ITC Geneva; Exim Bank Research

Exhibit 2.15: Major Importers of Dairy Products in the World (2014)



Source: ITC Geneva; Exim Bank Research

had a share of 0.1% in world import of dairy products (Exhibit 2.15).

Meat

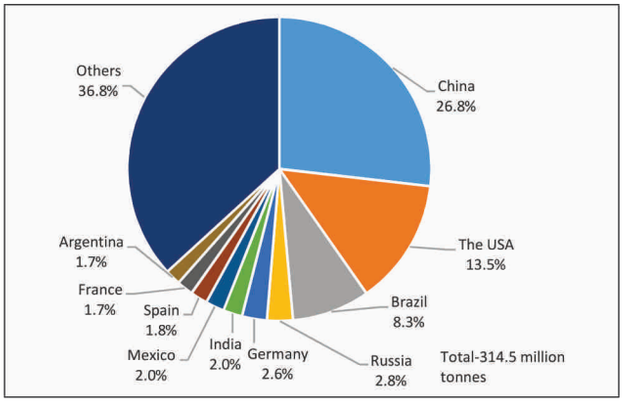
Production

The world's aggregate meat production during the year 2014 was estimated at 314.5 million tonnes. China was the leading producer of meat with a share of 26.8% in the world's aggregate production during the year 2014. The USA was the second leading meat producing country in the world with a production of 42.3 million tonnes. Brazil and Russia had shares of 8.3% and 2.8%, respectively in the global production. India accounted for 2.0% share of the total global meat production (Exhibit 2.16).

Trade

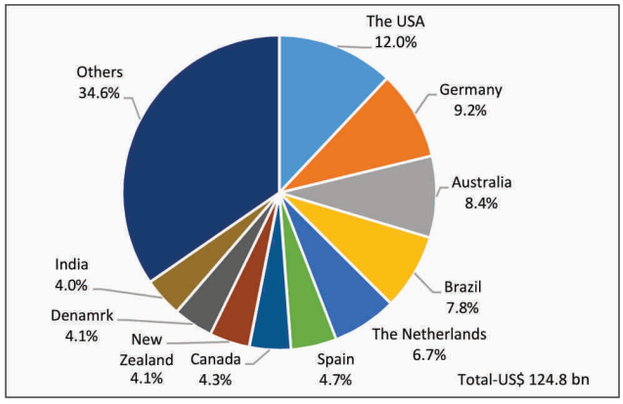
World exports of meat (bovine, ovine and pig) stood at US$124.8 billion in 2014. The USA, with a share of 12.0% in total world exports, was the largest exporter of meat products in 2014, followed by Germany (9.2%), Australia (8.4%), Brazil (7.8%), the Netherlands (6.7%) and Spain (4.7%). India was ranked tenth with a share of 4.0% in global exports of bovine, ovine and pig meat.

Exhibit 2.16: Major Meat Producing Countries in the World (2014)



Source: FAO; Exim Bank Research

Exhibit 2.17: Major Exporters of Meat (Bovine, Ovine and Pig) in the World (2014)



Source: ITC Geneva; Exim Bank Research

Table 2.8: Major Importers of Dairy Products

Rank	Country	2010	2014	CAGR	Share
		US$ mn		%	
1	Germany	5540	7271	7.0	9.1
2	China	1935	6300	34.3	7.9
3	Italy	4267	4844	3.2	6.0
4	The UK	3361	4049	4.8	5.1
5	The Netherlands	2727	3961	9.8	4.9
6	France	2915	3892	7.5	4.9
7	Belgium	2832	3808	7.7	4.8
8	Russia	1907	3425	15.8	4.3
9	Spain	2060	2282	2.6	2.8
10	Algeria	988	2035	19.8	2.5
87	India	178	45	-29.1	0.1
	World	**55468**	**80123**	**9.6**	**100.0**

Source: ITC Geneva; Exim Bank Analysis

Table 2.9: Major Exporters of Bovine, Ovine and Pig Meat

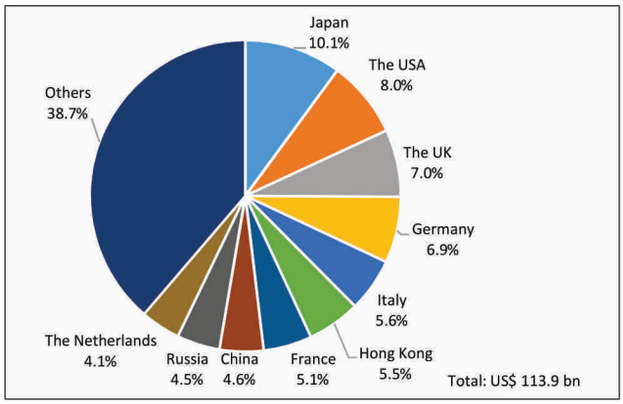
Rank	Country	2010	2014	CAGR	Share
		US$ mn		%	
1	The USA	9689	15009	11.6	12.0
2	Germany	9640	11470	4.4	9.2
3	Australia	6129	10465	14.3	8.4
4	Brazil	7076	9763	8.4	7.8
5	The Netherlands	6201	8312	7.6	6.7
6	Spain	4066	5882	9.7	4.7
7	Canada	4241	5320	5.8	4.3
8	New Zealand	3800	5178	8.0	4.1
9	Denmark	4903	5114	1.1	4.1
10	India	1767	5052	30.0	4.0
	World	**92052**	**124793**	**7.9**	**100.0**

Source: ITC Geneva; Exim Bank Research

However, among the top 10 exporters of meat products, India was the country to record the highest growth, registering a CAGR of 30.0% during the 2010 to 2014 period (Exhibit 2.17).

Japan was the largest importer of bovine, ovine and pig meat, accounting for 10.1% of the global imports of meat in 2014. Other major importers of meat were the USA (8.0%), the UK (7.0%), Germany (6.9%), Italy (5.6%) and Hong Kong (5.5%) (Exhibit 2.18).

Exhibit 2.18: Major Importers of Meat (Bovine, Ovine and Pig) in the World (2014)



Source: ITC Geneva; Exim Bank Research

Table 2.10: Major Importers of Bovine, Ovine and Pig Meat

Rank	Country	2010	2014	CAGR	Share
		US$ mn		%	
1	Japan	10112	11490	3.2	10.1
2	The USA	5019	9130	16.1	8.0
3	The UK	6689	7961	4.4	7.0
4	Germany	6661	7819	4.1	6.9
5	Italy	6086	6330	1.0	5.6
6	Hong Kong	3100	6300	19.4	5.5
7	France	5035	5750	3.4	5.0
8	China	1532	5206	35.8	4.6
9	Russia	5201	5094	-0.5	4.5
10	The Netherlands	3457	4709	8.0	4.1
130	India	1	2	18.9	0.0
	World	**86967**	**113881**	**7.0**	**100.0**

Source: ITC Geneva; Exim Bank Research

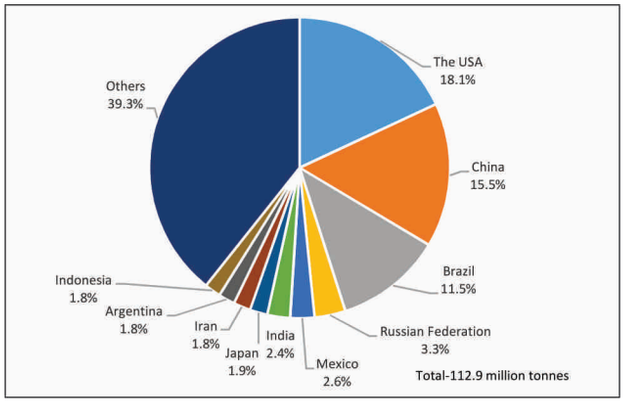
Poultry and Egg

Production

The world production of eggs was estimated at 75.5 million tonnes during the year 2014, registering an increase of 2.1% as compared to the previous year.

The global production of poultry meat during the year 2014 stood at 112.9 million tonnes. The USA was the leading producer of poultry meat with a share of nearly 18.1% of the aggregate global production. Other major producers of poultry meat during the same period were China, Brazil, Russia, Mexico and India with shares of 15.5%, 11.5%, 3.3%, 2.6% and 2.4% respectively (Exhibit 2.19).

Exhibit 2.19: Major Poultry Meat Producing Countries in the World (2014)

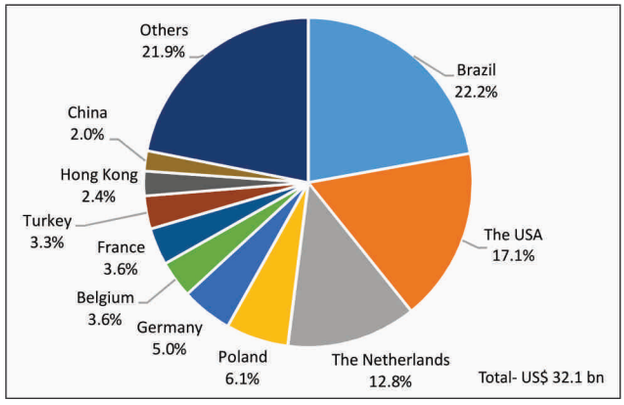


Source: FAO; Exim Bank Research

Trade

World exports of poultry and egg products were valued at US$ 32.1 billion during the year 2014. Brazil was

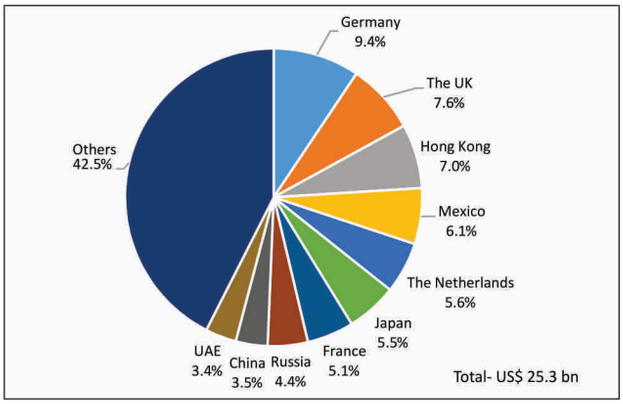
Exhibit 2.20: Major Exporters of Poultry and Egg in the World (2014)



Source: ITC Geneva; Exim Bank Research

the leading exporter of these products with its share in world exports estimated at 22.2%. Other major exporters of poultry and egg products included the USA (17.1%), the Netherlands (12.8%), Poland (6.1%), Germany (5.0%), Belgium and France (3.6% each). India had the thirty first position in export of poultry and egg,

Exhibit 2.21: Major Importers of Poultry and Egg in the World (2014)



Source: ITC Geneva; Exim Bank Research

Table 2.11: Major Exporters of Poultry and Egg

Rank	Country	2010	2014	CAGR	Share
		US$ mn		%	
1	Brazil	6034	7122	4.2	22.2
2	The USA	4111	5485	7.5	17.1
3	The Netherlands	2984	4102	8.3	12.8
4	Poland	1055	1976	17.0	6.1
5	Germany	1157	1611	8.6	5.0
6	Belgium	976	1171	4.7	3.6
7	France	1115	1170	1.2	3.6
8	Turkey	352	1047	31.3	3.3
9	Hong Kong	860	772	-2.7	2.4
10	China	486	636	7.0	2.0
31	India	61	101	13.4	0.3
	World	**24233**	**32145**	**7.3**	**100.0**

Source: ITC Geneva; Exim Bank Research

Table 2.12: Major Importers of Poultry and Egg

Rank	Country	2010	2014	CAGR	Share
		US$ mn		%	
1	Germany	2008	2387	4.4	9.4
2	The UK	1714	1932	3.0	7.6
3	Hong Kong	1717	1773	0.8	7.0
4	Mexico	852	1542	16.0	6.1
5	The Netherlands	893	1418	12.3	5.6
6	Japan	1154	1403	5.0	5.5
7	France	991	1289	6.8	5.1
8	Russia	945	1105	4.0	4.4
9	China	963	879	-2.3	3.5
10	UAE	0	858	-	3.4
130	India	0	1	-	0.0
	World	**20509**	**25370**	**5.5**	**100.0**

Source: ITC Geneva; Exim Bank Research

accounting for a mere 0.3% of world exports during the year 2014 (Exhibit 2.20).

Germany was the leading importer of poultry and egg products during the year 2014, and had a share of 9.4% in the global imports. The UK was the second largest importer with imports aggregating US$ 1.9 billion. Other major importers of these products included Hong Kong, Mexico, the Netherlands, Japan, France, Russia, China and UAE (Exhibit 2.21).

OTHER PROCESSED FOOD

The category of 'other processed food' includes groundnuts, guar gum, jaggery and confectionery, cocoa products, cereal preparations, milled products, processed beverages, and miscellaneous preparations, as categorised by APEDA. The exports of 'other processed foods' from the world was valued at US$ 316.7 billion during the year 2014. The exports of other processed food has recorded a CAGR of 7.7% during the period 2010 to 2014.

3. Indian Scenario

India ranks second in terms of arable land in the world, and has the advantage of being endowed with a diverse agro climatic zone. These benefits enable India to produce a wide range of agricultural products. It is this potential in the field of agriculture that leads to the provision of large and varied raw materials for the food processing industry. While India realises the immense potential in the food processing industry, tapping this can help India to become a leading global food supplier and get recognized as an important player in the global agricultural and food trade.

Moreover, with a population of 1.2 billion growing at about 1.25% per annum, India is a large and growing market for food products[6]. Additionally, India has been experiencing a major shift in its dietary pattern, driven by its young population. This factor along with other trends such as a rise in the disposable income of the population has been fuelling the demand for processed food.

Emerging Industry

The agricultural production in India has been rising steadily over the years. According to the Ministry of Food Processing Industries (MOFPI), Government of India, the country is the leading producer of milk, ghee, pulses, ginger, bananas, guavas, papayas and mangoes globally. Additionally, India ranks second in the world in the production of rice, wheat, and various other vegetables and fruits. The provision of ample quantity of raw material, and a consistent rise in the demand for food products has led to a vibrant food processing industry.

Table 3.1: Contribution of Food Processing Industries to GDP at 2011-12 Prices

Economic Activity	2011-12	2012-13	2013-14	2014-15
	Rs. thousand crore			
GDP - All India	8195.5	8599.2	9169.8	9827.1
GDP- Manufacturing	1482.2	1574.5	1658.2	1776.5
GDP- Agriculture, Forestry & Fishing	1505.6	1523.5	1579.3	1582.9
GDP-Food Processing Industry	150.4	143.4	149.6	160.2
Growth (%)	**2012-13**	**2013-14**	**2014-15**	**AAGR**
GDP - All India	4.93	6.64	7.17	6.23
GDP- Manufacturing	6.23	5.32	7.13	6.23
GDP- Agriculture, Forestry & Fishing	1.19	3.66	0.23	1.69
GDP-Food Processing Industry	-4.66	4.32	7.13	2.26
Share of FPI in GDP (%)	**2011-12**	**2012-13**	**2013-14**	**2014-15**
GDP - All India	1.83	1.67	1.63	1.63
GDP- Manufacturing	10.15	9.11	9.02	9.02
GDP- Agriculture, Forestry & Fishing	9.99	9.41	9.47	10.12

Source: Ministry of Food Processing Industries; Govt. of India

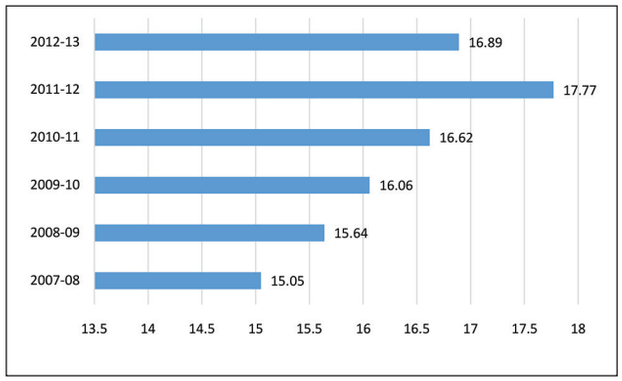
[6]CII-RABO Equity Report on Driving Make in India in Food Processing

According to the available data from the MOFPI, the food processing sector has been growing at a faster rate than the increase in the agricultural sector. While the annual growth rate of the food processing sector averaged 2.26% during the 2011-12 to 2014-15 period, that of the agricultural sector averaged only 1.69% during this period. As per the Index of Industrial Production, the food processing sector has performed better than the manufacturing sector during the period 2014-15. While the growth in index for the food processing sector was 4.8% during this period, that of the manufacturing sector was recorded as 2.3%.

Generating Employment

Food Processing is an employment intensive industry and offers immense employment generation opportunities. The sector contributed 11.69% to the employment generated in the registered factory sector in 2012-13. According to the latest Annual Survey of Industries (ASI) for 2012-13, the aggregate number of people engaged in registered food processing sector amounted to 16.89 lakhs. The employment in the registered food processing units has recorded a CAGR of 2.3% during the period 2007-08 to 2012-13. As per the National Sample Survey Office (NSSO) 67th Round (2010-11), the unregistered food processing sector provides employment to around 47.9 lakh workers.

Exhibit 3.1: Employment in Registered Food Processing Units (in lakhs)



Source: Ministry of Food Processing Industries; Govt. of India

Foreign Direct Investments

In the food processing sector, 100% FDI is permitted under the automatic route. Additionally, 100% FDI is allowed through the government approval route for trading, including through e-commerce in the case of food products manufactured or produced in India. The Indian food processing industry is an attractive FDI destination.

Cumulative FDI equity inflows during the period April 2000 to December 2016 in the food processing sector was estimated at US$ 7.5 billion. This was equivalent to a share of 2.3% of the total FDI inflows in the country during that period. The FDI inflow in the food processing industry has recorded a CAGR of 21.8% during the period 2010-11 to 2015-16. The FDI in food processing industry peaked during the year 2013-14 with investments reaching US$ 3982.9 million, however it declined considerably in the following two years and amounted to US$ 500.8 million during the first half of 2016-17 (Exhibit 3.2).

Government Policies

To support the food processing sector, the Government of India has taken several initiatives. Some of the major ones are as follows:

- The food processing sector had been recognised as a priority sector in the New Manufacturing Policy during the year 2011.
- Loans to food and agro based processing units and cold chain are covered under the Priority Sector Lending (PSL) by banks.
- 100% FDI is permitted through automatic route in food processing sector.
- Concessional rate of customs duty applicable on imported equipment under the project import benefits.
- Income tax deductions on capital expenditure allowed at the rate of 150% for setting up and operating cold chain or warehouse for storage of agricultural produce.

- 100% income tax exemption available to new food processing, preservation and packaging units for the first five years of operation, and at the rate of 25%-30% thereafter.
- The Government has set up a special fund called "Food Processing Fund" worth approximately USD 300 million (at Rs. 67.25 to 1 USD) in National Bank for Agriculture and Rural Development (NABARD) for extending affordable credit to designated food parks and the individual food processing units in the designated food parks.

The Union Budget 2017-18 has also announced a few measures in support of the food processing sector. These include the following:

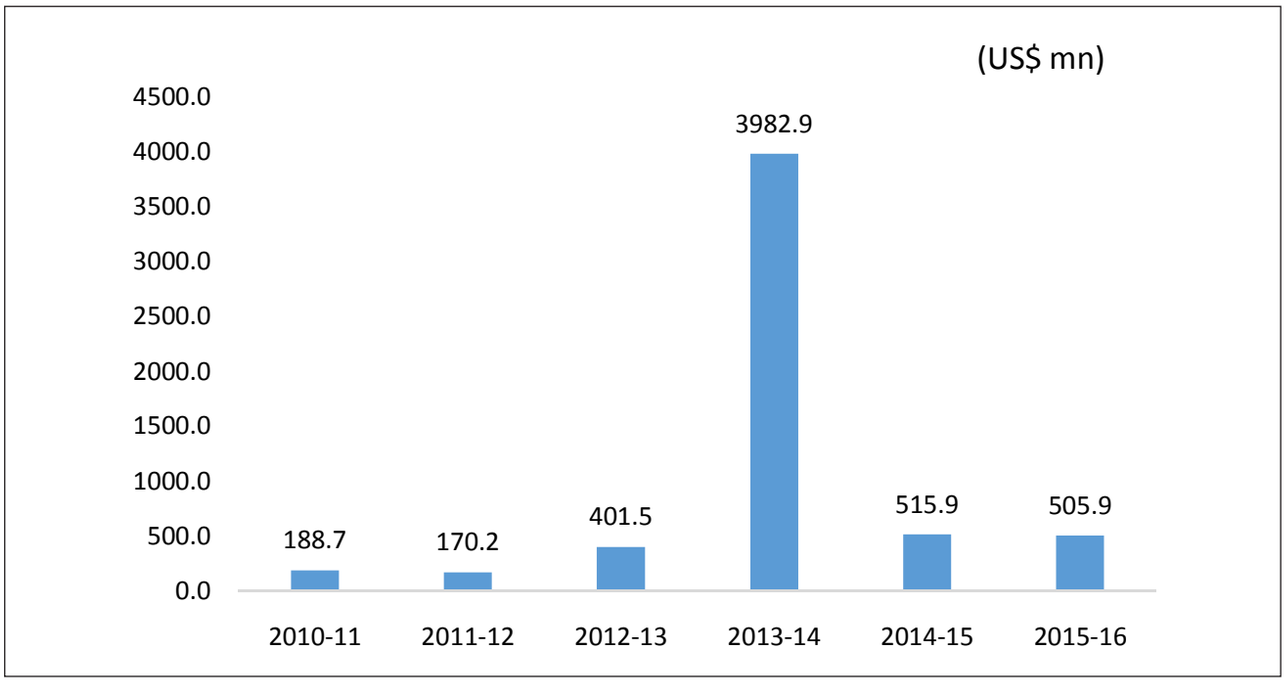
- Dairy Processing Infrastructure Development Fund to be set up with NABARD with an initial corpus of Rs. 8,000 crore.
- Coverage under Fasal Bima Yojna scheme to be increased from 30% to 40%.
- E-National Agriculture Market (e-NAM) coverage will be expanded to 585 markets.
- New mini labs in Krishi Vigyan Kendras (KVKs) and efforts to ensure 100% coverage of all 648 KVKs in the country for soil sample testing.

Table 3.2: Share of Food Processing Industry in Total FDI Equity Inflow

Year	FDI in Food Processing Industry (US$ mn)	Share of FPI in Total FDI Equity Inflow (%)
2010-11	188.7	0.9
2011-12	170.2	0.5
2012-13	401.5	1.8
2013-14	3982.9	16.4
2014-15	515.9	1.7
2015-16	505.9	1.3

Source: DIPP

Exhibit 3.2: FDI Inflows in Food Processing Industry

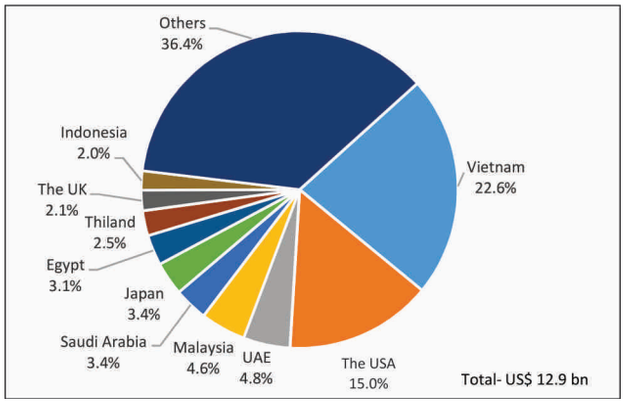


Source: DIPP

4. Trade Scenario of Indian Processed Food Industry

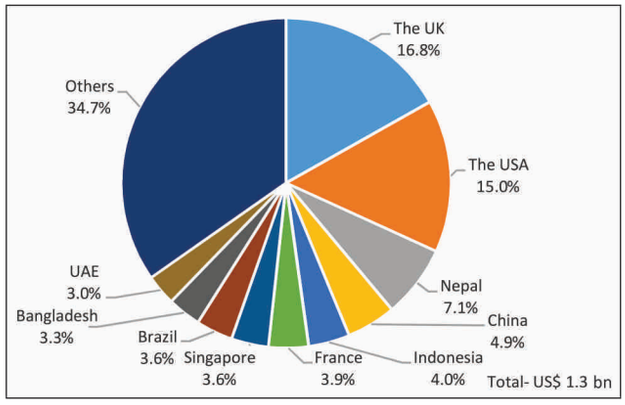
The food processing sector is among the relatively larger sectors in India in terms of production, consumption and exports. During the year 2015-16, the exports of processed food from India stood at US$ 12.9 billion, registering a decline of approximately 17.3% as compared to the previous year. Vietnam was the leading export destination for processed foods from India and occupied a share of 22.6% in the country's aggregate exports. The other major export destinations for Indian processed foods included the USA (15%), UAE (4.8%), Malaysia (4.6%), Saudi Arabia (3.4%), Japan (3.4%), Egypt (3.1%), Thailand (2.5%), the UK (2.1%) and Indonesia (2%) (Exhibit 4.1).

Exhibit 4.1: India's Major Export Destinations of Processed Food (2015-16)



Source: DGCIS; Exim Bank Research

Exhibit 4.2: India's Major Import Sources of Processed Food (2015-16)



Source: DGCIS; Exim Bank Research

The imports of processed food from India has been estimated at US$ 1.3 billion during the year 2015-16, with the value of imports being stable as compared to the previous year. The UK, with a share of 16.8% in the total imports, was the leading import source for processed food in India in 2015-16. The other major import sources were the USA, Nepal, China, Indonesia, France, Singapore, Brazil, Bangladesh and UAE (Exhibit 4.2).

Analysis of Sub-Segments

This study specifically focusses on the status of the following segments of the food processing industry in India, given their contribution to the sector as a whole.

- Processed Fruits and Vegetables
- Processed Marine Products
- Processed Meat, Poultry and Dairy

PROCESSED FRUITS AND VEGETABLES

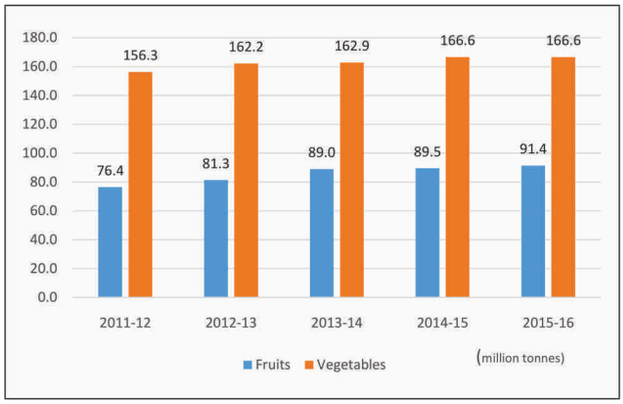
Production

The production of fruits and vegetables has increased considerably in the country in recent years. India is the second largest producer of fruits and vegetables in the world, second only to China, which is the largest producer of fruits and vegetables globally[7]. Fruits and vegetables together constituted about 90.7% of the total horticultural production in the country. India is the leading producer of bananas, papayas, mangoes and guavas, and holds the second position in the production of potatoes, green peas, tomatoes, cabbage and cauliflower.

According to the National Horticulture Board, fruit production in India has increased from 28.6 million tonnes in 1991-92 to 91.4 million tonnes in 2015-16. Similarly, vegetable production has increased from 58.5 million tonnes to 166.6 million tonnes during the same period. The production of fruits and vegetables has recorded a CAGR of 4.6% and 1.6%, respectively during the five year period 2011-12 to 2015-16. On a year on year basis, the production of fruits increased by 2.2%,

[7]Pocket Book of Agricultural Statistics 2014; Ministry of Agriculture and Farmers Welfare; Govt. of India

Exhibit 4.3: Production of Fruits and Vegetables in India



Source: National Horticulture Board, Ministry of Agriculture and Farmers Welfare; Govt. of India

while the growth in production of vegetables was flat during 2015-16 (Exhibit 4.3).

The area under cultivation of fruits and vegetables has also increased in sync with the production. The area under fruit cultivation increased from 2.9 million ha in 1991-92 to approximately 6.4 million ha in 2015-16, and area under vegetable cultivation increased from 5.6 million ha to 9.6 million ha in 2015-16.

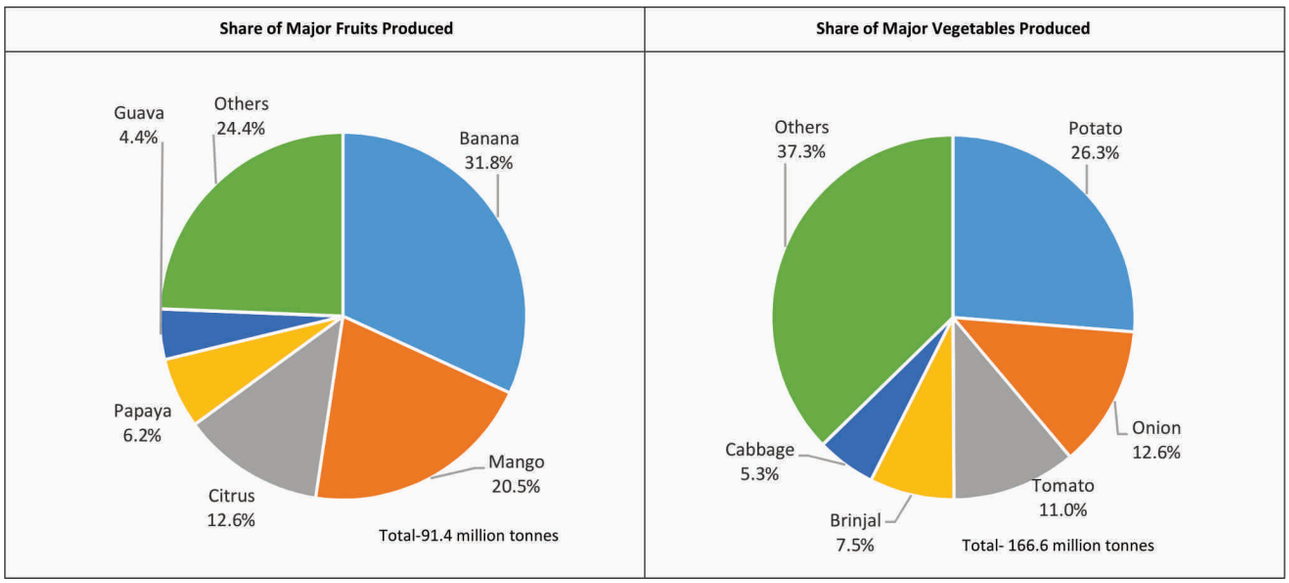
With a share of 31.8% in total fruits produced, banana is the leading fruit in terms of quantity produced. Other major fruits produced in India are mango (20.5%), citrus (12.6%), papaya (6.2%) and guava (4.4%). Potato was the major vegetable produced in India with a 26.3% share in total vegetable production during 2015-16. Onion was the second leading vegetable produced in India followed by tomato, brinjal and cabbage (Exhibit 4.4).

Uttar Pradesh was the leading producer of fruits in India, with a production of approximately 10.1 million tonnes in 2015-16 (11.0% of total fruit production). Andhra Pradesh (10.9%) and Maharashtra (10.6%) were the second and third largest fruit producing states in India. As far as vegetables are concerned, Uttar Pradesh and West Bengal were the largest vegetable producing states with shares of 15.4% and 13.7% each. Other major vegetable producing states included Bihar, Madhya Pradesh, Odisha, Tamil Nadu, and Andhra Pradesh (Exhibit 4.5).

Trade Pattern

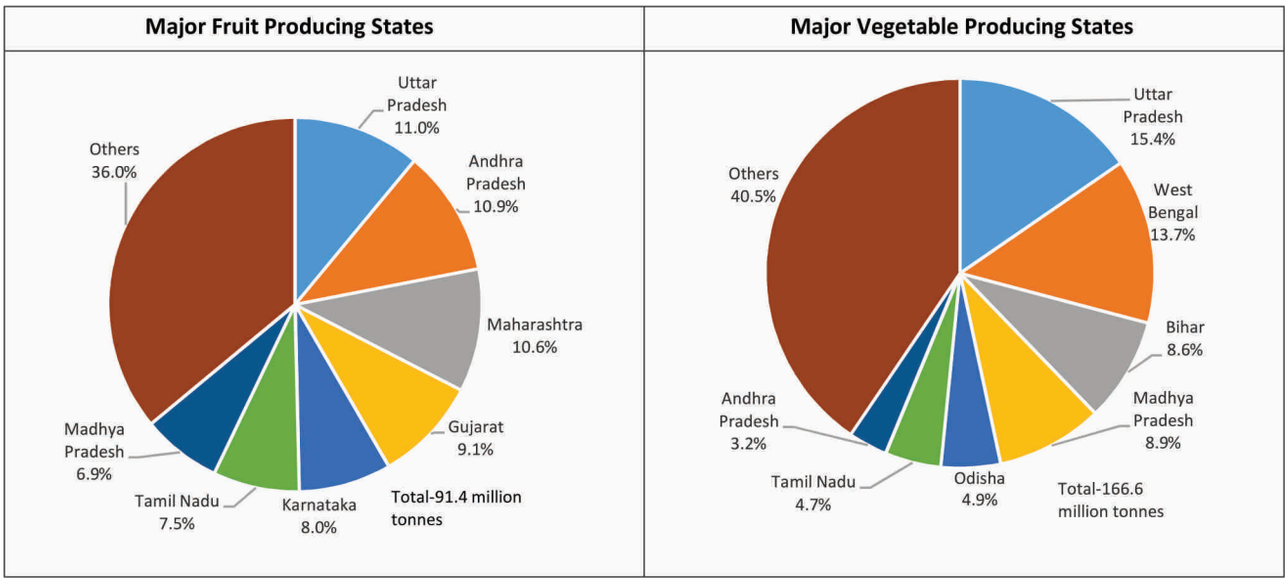
Though India has registered a significant growth in the export of processed fruits and vegetables, India's share constitutes an insignificant portion of global exports of these commodities. In the light of growing global demand for processed fruits and vegetables and India being amongst the leading producer of fruits and vegetables in the world, there is a huge scope for

Exhibit 4.4: Major Fruits and Vegetables Produced in India (2015-16)



Source: National Horticulture Board, Ministry of Agriculture and Farmers Welfare; Govt. of India

Exhibit 4.5: State- Wise Production of Fruits and Vegetables in India (2015-16)



Source: National Horticulture Board, Ministry of Agriculture and Farmers Welfare; Govt. of India

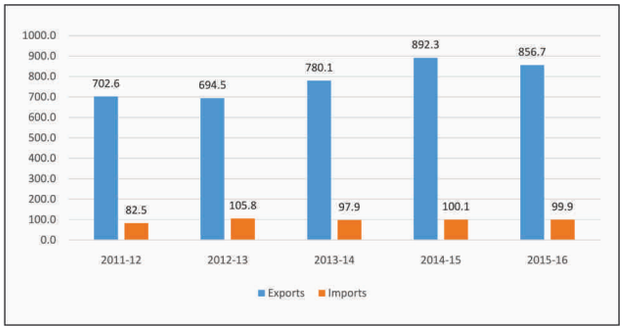
further surge in exports. India's export of processed fruits and vegetables were estimated at US$ 856.7 million during the year 2015-16, registering a marginal decline of 4% as compared to the previous year. India's imports of processed fruits and vegetables during the same period have observed a decline of 0.2% and were estimated at US$ 99.9 million. The exports of processed fruits and vegetable during the period 2011-12 to 2015-16 increased at a CAGR of 5.1%, while imports during the same period registered a CAGR of 4.9% respectively (Exhibit 4.6).

The USA, with a share of 14.4%, is the leading export destination for processed fruits and vegetables from India. The exports to Saudi Arabia during the year 2015-16 was estimated at US$ 81.5 million and it is the second largest export destination of processed fruits and vegetables from India. The Netherlands (8.3%), the UK (8.1%), Germany (5.4%), UAE (5.2%), Russia (3.7%), France (3.6%), Belgium (3.4%) and Canada (2.8%) are other significant export destinations of India's processed fruits and vegetables (Exhibit 4.7).

China is the leading import source of processed fruits and vegetables followed by the USA and Afghanistan.

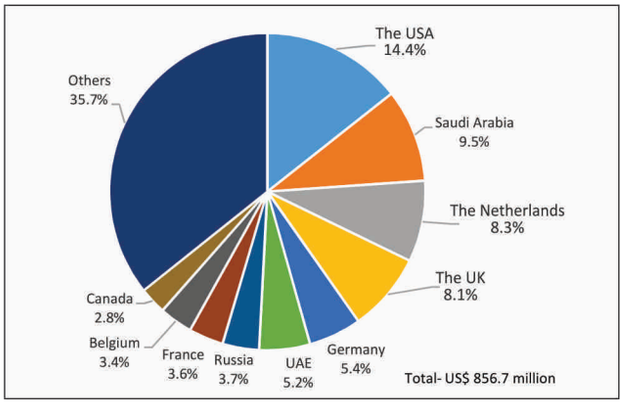
According to MOFPI, the wastage of fruits and vegetables is estimated at approximately 4.6% - 15.9% annually.

Exhibit 4.6: India's Export and Import of Processed Fruits and Vegetables (US$ million)



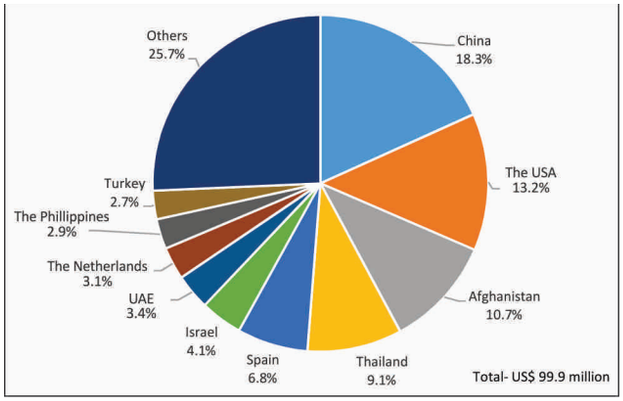
Source: DGCIS, Exim Bank Research
*Includes exports of processed fruits and vegetables except pulses

Exhibit 4.7: India's Major Export Destinations of Processed Fruits and Vegetables (2015-16)



Source: DGCIS, Exim Bank Research

Exhibit 4.8: India's Major Import Sources of Processed Fruits and Vegetables (2015-16)



Source: DGCIS, Exim Bank Research

This loss can be attributed to lack of modern harvesting practices and inadequate cold chain infrastructure. The processing levels in fruits and vegetables is as low as 2%. Thus, there is an urgent requirement to invest in initiatives that will ensure lesser wastage, by enabling adequate infrastructure, research and development for processed food and packaging, innovation in areas of farm preservation and skill development. India's geographical location and close proximity to the countries in South East Asia gives it immense advantages for prosperity in trade. Thus, this potential should be optimally utilized for further developments.

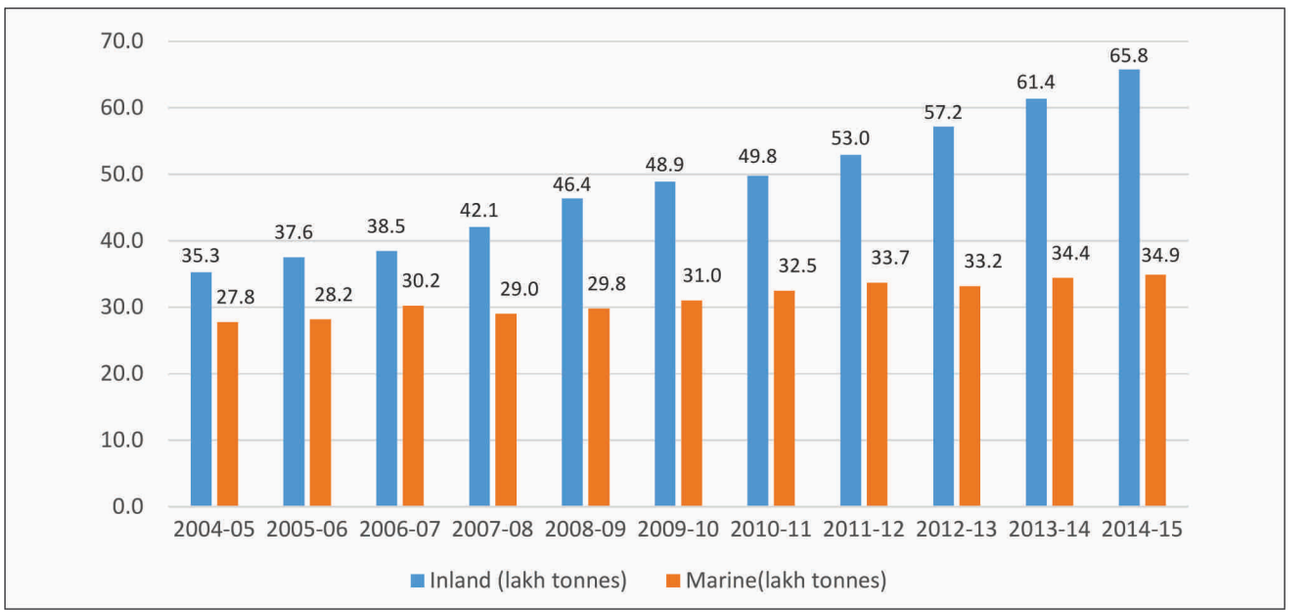
PROCESSED FISHERIES AND SEAFOOD

Fisheries and aquaculture has emerged as an important commercial activity from its traditional role as a supplementary activity for subsistence. The sector has displayed significant developments over the years, and plays a major role in increasing food supply, generating job opportunities, raising nutritional levels and earning foreign exchange. India today is the second largest producer of aquaculture in the world producing approximately 7% of the global output, second only to China. India is endowed with abundant geographical resources including a long coastline, rivers, canals, reservoirs, ponds, tanks and brackish water, which are suited for both inland and marine fishery.

Production

Fish production in India was estimated to be 100.7 lakh tonnes, recording a year-on-year growth of 5.1% in 2014-15. While inland fish production[8] in India recorded a CAGR of 6.4% during the period 2004-05 to 2014-15, marine fish production, estimated at 34.9 lakh tonnes,

Exhibit 4.9: Fish Production in India (lakh tonnes)



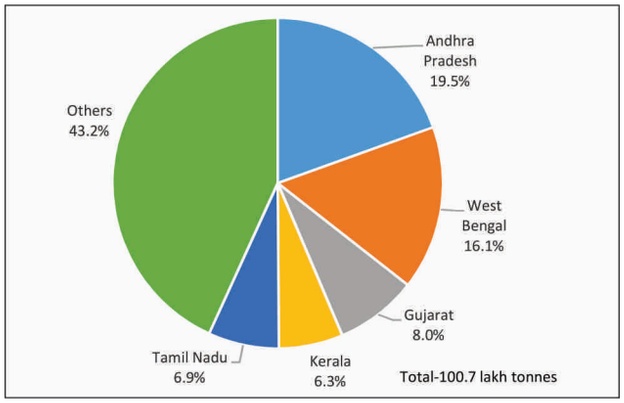
Source: Department of Animal Husbandry, Dairying & Fisheries, Ministry of Agriculture and Farmers Welfare; Govt. of India

[8]Capture Fishery: The harvesting of fish stocks occurring naturally in a body of water. Aquaculture: The farming of fish/shell fish in freshwater or salt water. Inland Fishery is defined by FAO as Inland Capture plus Aquaculture.

registered a CAGR of 2.3% during the same period (Exhibit 4.9).

The top 5 states for fisheries production in India are Andhra Pradesh, West Bengal, Gujarat, Kerala and Tamil Nadu with a combined share of nearly 57%. Andhra Pradesh is the leading state in inland fishery production and the quantity produced during 2014-15 was nearly 15 lakh tonnes. Other major states in inland fishery production are West Bengal, Uttar Pradesh and Bihar with shares of 21.9%, 7.5% and 7.3%, respectively.

Exhibit 4.10: Top 5 Fish Producing States in India (2014-15)



Source: Department of Animal Husbandry, Dairying & Fisheries, Ministry of Agriculture and Farmers Welfare Govt. of India

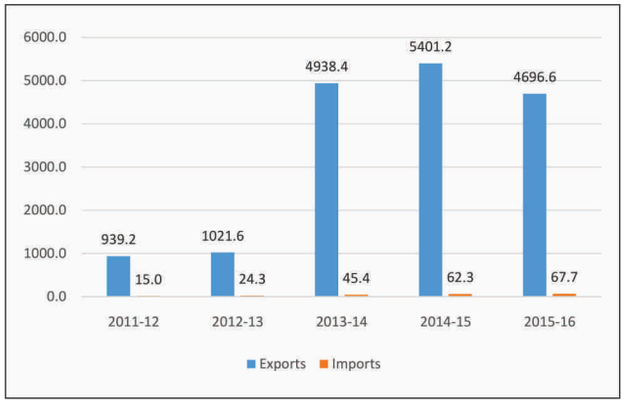
During the year 2014-15, Gujarat was the largest producer of marine fish production with the quantity of production being estimated at approximately 7 lakh tonnes, followed by Kerala and Maharashtra.

Trade Pattern

Indian seafood is demanded substantially in the global markets, and over the years, seafood exports from India have increased both quantitatively and qualitatively.

India had a significant trade surplus in the fishery and seafood sector, with exports amounting to US$ 4696.6 million and imports worth US$ 67.7 million during the year 2015-16. While India's export of fishery and seafood has registered a CAGR of 49.5%, the imports have recorded a CAGR of 45.9% during the period 2011-12 to 2015-16. The exports of fishery and seafood suffered a setback during 2015-16, as exports declined by 13% as compared to the previous year. However, imports of fishery and seafood increased at 8.7% year-on-year during the same period (Exhibit 4.11).

Exhibit 4.11: India's Export and Import of Processed Fishery and Seafood Products (US$ million)



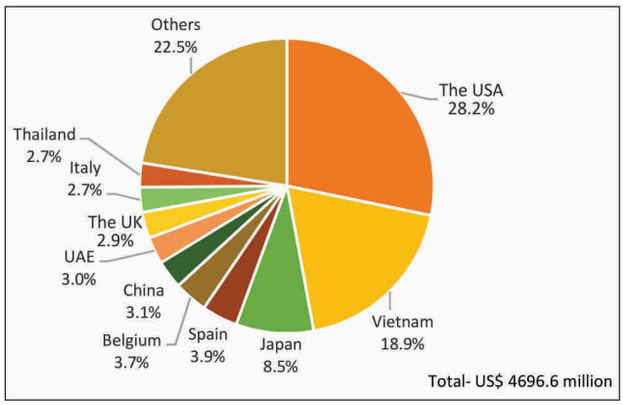
Source: DGCIS; Exim Bank Research

The USA was the leading importer of processed fishery and seafood from India and accounted for nearly 28.2% of the aggregate seafood exports from India during 2015-16. Vietnam was the second largest seafood importer with imports of US$ 885.6 million. Other major export destinations of seafood from India included Japan (8.5%), Spain (3.9%), Belgium (3.7%), China (3.1%), UAE (3.0%), the UK (2.9%), Italy (2.7%) and Thailand (2.7%). Frozen shrimp was the major item of export from India. The USA was the largest importer of frozen shrimp from India, followed by the European Union and South East Asia. The increase in seafood exports from India can be attributed to an increase in shrimp aquaculture in India. Most of the exports are in the frozen form and there is immense potential for export of value added products (Exhibit 4.12).

Bangladesh was the largest supplier of fishery and seafood products to India during 2015-16. The other significant import sources for fishery products to India included Vietnam, the USA, Myanmar, the UK, Oman, Indonesia, Thailand, Denmark and Singapore (Exhibit 4.13).

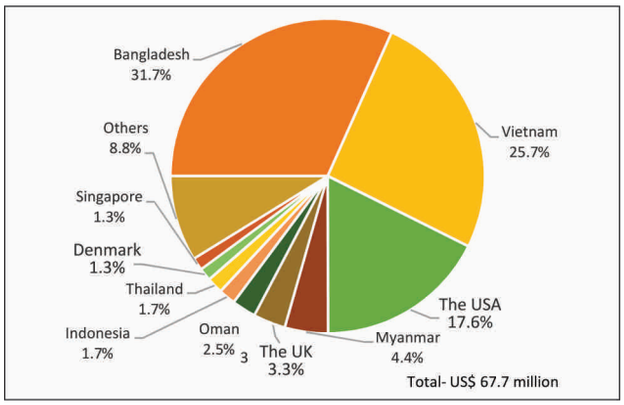
There is a huge scope for augmentation in exports of seafood from India, given the present low levels of value addition and lack of product branding. In this regard, various measures need to be taken by the Government

Exhibit 4.12: India's Major Export Destinations of Processed Fishery and Seafood Products (2015-16)



Source: DGCIS; Exim Bank Research

Exhibit 4.13: India's Major Import Sources of Processed Fishery and Seafood Products (2015-16)

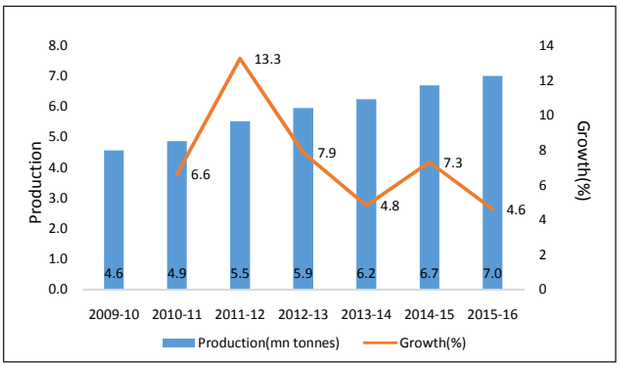


Source: DGCIS; Exim Bank Research

to encourage diversification of products, promote value addition and product branding such that the export market can flourish. Moreover, upgrading infrastructure and ensuring betterment of the value chain thereby enabling the supply of quality fish to the consumers is critical for enhancing exports. As per the Ministry of Food Processing Industries, the processing levels[9] of marine food in India have been estimated at 23%. There is huge demand for processed and ready-to-eat marine products in both the domestic and overseas market.

Due to the increased focus on environmental sustainability of fisheries, traceability of seafood and eco-labelling are being given increased emphasis.

Exhibit 4.14: Meat Production in India



Source: Ministry of Agriculture and Farmers Welfare; Govt. of India

With respect to this, demonstrating the traceability of seafood has become a crucial requirement for exports to foreign markets, and priority should be given to ensure international standards of seafood are complied with.

PROCESSED MEAT, POULTRY AND DAIRY

Production

Meat and Poultry

India is the leading producer of livestock in the world. The aggregate production of meat in India during the year 2015-16 was estimated at 7 million tonnes, registering a year-on-year growth of 4.6% (Exhibit 4.14). The total production of meat recorded a CAGR of 7.4% during the period 2009-10 to 2015-16. Uttar Pradesh is the largest producer of meat in the country and accounted for approximately 20.2% of the aggregate production of meat in India during 2015-16. West Bengal with a share of 9.8% and Maharashtra, with a share of 9.6%, were the other leading producers of meat during 2015-16 (Table 4.1).

With an estimated production of 2 million tonnes and a share of 30.2% in total meat production, commercial poultry was the largest segment of meat production during the year 2014-15 (Exhibit 4.15).

Buffalo meat was the second largest segment with a production of approximately 1.4 million tonnes (20.98% share) during the same period. Uttar Pradesh was the largest producer of buffalo meat in India followed by

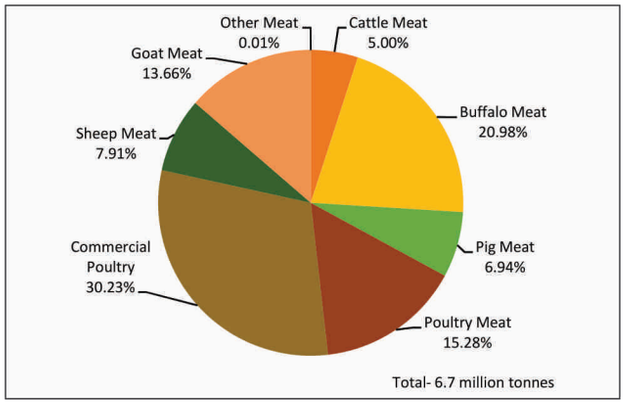
[9]The level of conversion of raw materials to food or causing the alteration of food into other forms of consumption.

Table 4.1: Major Meat Producing States in India

State	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
	thousand tonnes					
Uttar Pradesh	845.0	955.6	1136.9	1221.0	1397.2	1417.9
West Bengal	577.0	611.1	648.4	649.0	657.2	686.3
Maharashtra	563.0	584.7	590.7	605.0	630.6	675.1
Andhra Pradesh	747.0	823.6	906.2	935.0	527.7	566.3
Tamil Nadu	466.0	460.4	462.3	465.0	491.9	544.5
Kerala	124.0	425.6	401.0	416.0	445.8	466.0
Haryana	319.0	336.9	347.6	367.0	381.4	402.8
Bihar	223.0	227.8	228.3	292.0	294.3	301.7
Punjab	175.0	180.8	212.1	235.0	236.9	249.9
Karnataka	124.0	139.6	166.1	170.0	181.5	196.6
India	4869	5514.3	5948.1	6235	6691.7	7020.0

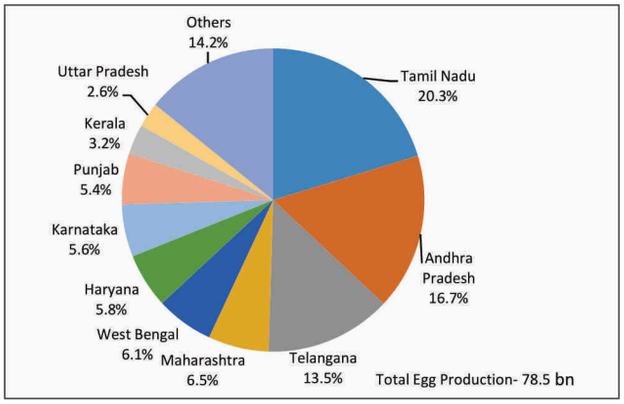
Source: Ministry of Agriculture and Farmers Welfare; Govt. of India

Exhibit 4.15:Category-Wise Meat Production in India (2014-15)



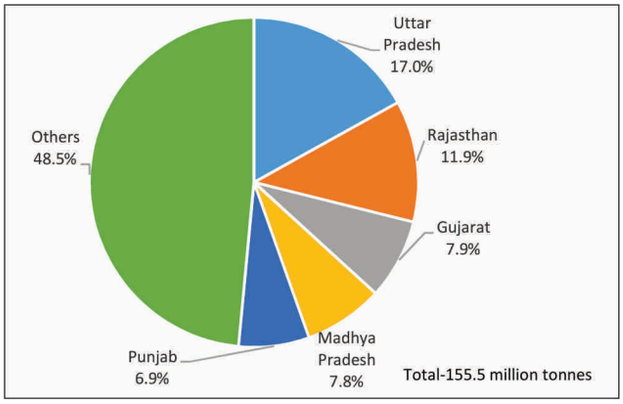
Source: Ministry of Agriculture and Farmers Welfare; Govt. of India

Exhibit 4.16: Major Egg Producing States in India (2014-15)



Source: Ministry of Agriculture and Farmers Welfare; Govt. of India

Exhibit 4.17: Major Milk Producing States in India (2015-16)



Source: National Dairy Development Board

Table 4.2: Milk Production and Per Capita Availability of Milk in India

Year	Production	Per capita availability
	(million tonnes)	(gms/day)
2009-10	116.4	273
2010-11	121.8	281
2011-12	127.9	290
2012-13	132.4	299
2013-14	137.7	307
2014-15	146.3	322
2015-16	155.5	337

Source: National Dairy Development Board

Punjab and Kerala. The production of poultry meat was estimated at 1 million tonne. Haryana and West Bengal were the leading producers of poultry meat with shares of 35.9% and 33.1% respectively. The production of sheep meat and goat meat was estimated at 0.5 million tonnes and 0.9 million tonnes, respectively during the year 2014-15. As per the Ministry of Food Processing Industries, the current processing levels in meat stand at 21% and that of poultry stand at 6%.

Egg

Egg production in India during the year 2014-15 was estimated at 78.5 billion. Egg production in India has displayed an increasing trend with the year-on-year growth rate being nearly 5%. With production of approximately 15.9 billion eggs, Tamil Nadu was the largest egg producing state accounting for a share of 20.3% in aggregate production of eggs. Other major egg producing states in India are Andhra Pradesh, Telangana, Maharashtra, West Bengal and Haryana (Exhibit 4.16).

Dairy

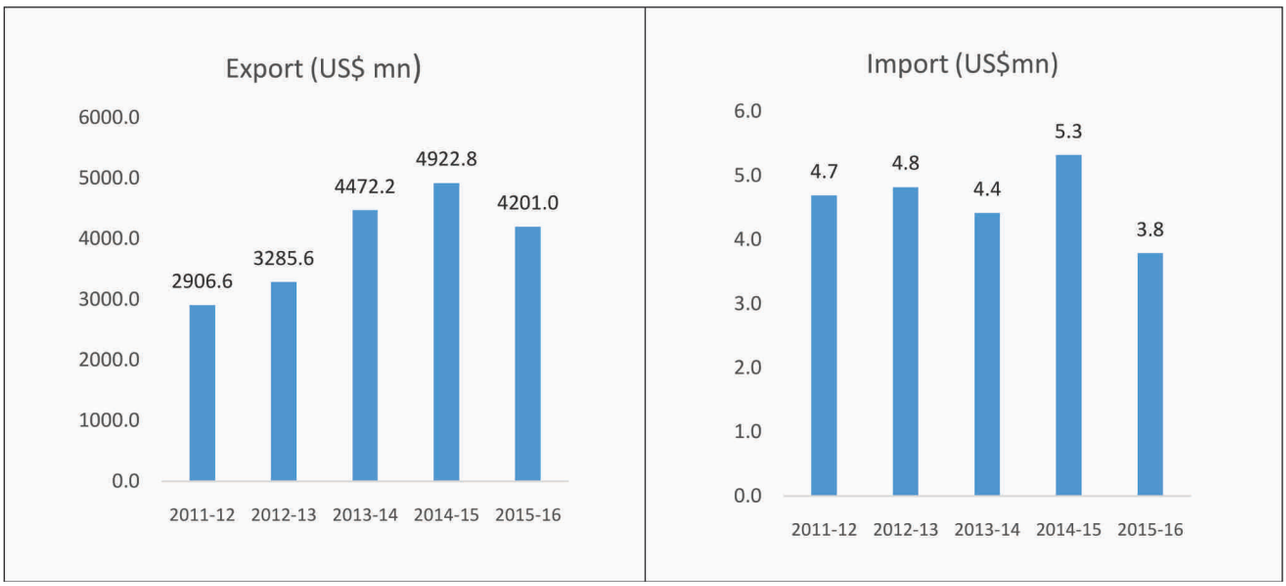
India was the largest milk producer in the world, accounting for approximately 18.3% of total global output during the year 2014. Uttar Pradesh is the leading milk producing state in the country and its share in the total milk produced in India during 2015-16 was 17.0%. Rajasthan, Gujarat, Madhya Pradesh and Punjab had shares of 11.9%, 7.9%, 7.8% and 6.9% respectively (Exhibit 4.17). India is also the largest consumer of milk with per capita availability being 337 gms/ day, slightly higher than the global average. The production of milk during the year 2015-16 was estimated at approximately 155.5 million tonnes, displaying a growth of 6.3% as compared to the previous year (Table 4.2). The production of milk in India has recorded a CAGR of 4.9% during the period 2009-10 to 2015-16. India's milk production is expected to reach 180 million tonnes by 2020 from the current 155.5 million tonnes, and the demand for that period is projected at 200 million tonnes.

Trade Pattern

Meat

India is among the largest exporters of meat in the world and the value of exports during the year 2015-16 was US$ 4201 million. However, the export of meat products have declined at a y-o-y rate of 14.7% during this period. Nonetheless over a larger time horizon, exports of meat products from India have grown at a healthy pace, registering a CAGR of 9.6% during the

Exhibit 4.18: India's Export and Import of Meat Products (US$ million)



Source : DGCIS, Exim Bank Research

period 2011-12 to 2015-16, as the value of exports rose from US$ 2906.6 million to US$ 4201 million. The imports of meat were estimated at US$ 3.8 million during 2015-16, registering a sharp decline of 28.8% as compared to the previous year (Exhibit 4.18).

Vietnam was, by far, the leading export destination of meat from India, accounting for 47.4% of the aggregate exports of meat products from India during the year 2015-16. Malaysia, with imports of US$ 410 million was the second largest importer of meat from India. Other leading export destinations of meat from India were Egypt (8.5%), Saudi Arabia (5.8%), UAE (4.4%), Iraq (2.8%), Philippines (2.8%), Algeria (2.7%), Thailand (2.6%) and Kuwait (2.3%) (Exhibit 4.19).

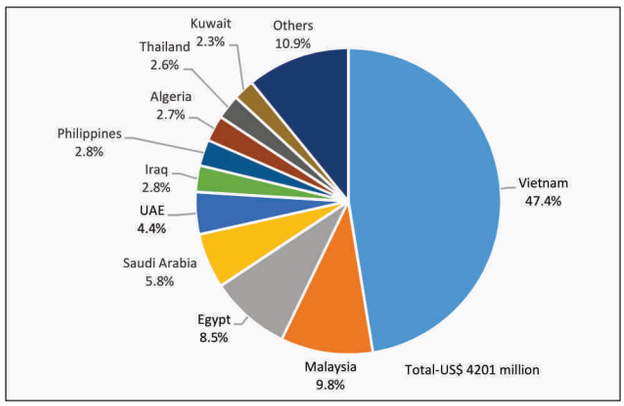
Sri Lanka was the largest import source of meat and meat products for India and its share in India's aggregate imports was 23.2% during the year 2015-16. Other major source countries for imports during the same period were Belgium, New Zealand, Spain, Italy, the UK, Australia, the Netherlands, Germany and Thailand (Exhibit 4.20).

Poultry and Egg

The exports of poultry and egg products from India have been displaying a rising trend, with exports increasing from US$ 45.4 million in 2011-12 to US$ 117.0 million in 2015-16, thereby registering a CAGR of 26.7% during this period. On the other hand, imports of poultry and egg were valued at US$ 1.3 million during 2015-16. The import of egg and poultry rose considerably during the year 2013-14, and reached the value US$ 0.9 million (Exhibit 4.21).

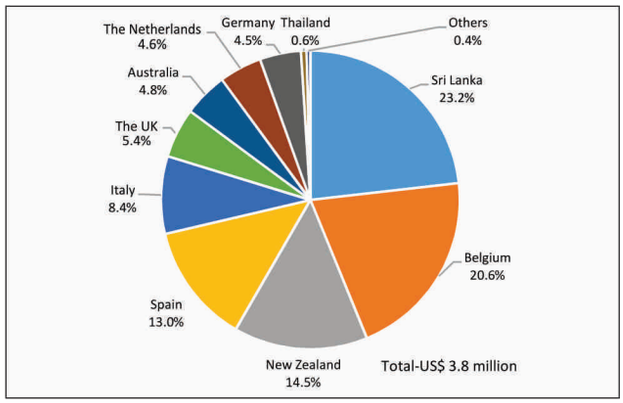
Oman was the leading export destination for poultry and eggs from India. The value of exports to Oman was approximately US$ 31 million during the year 2015-16. Saudi Arabia, with a share of 12.5%, was the second largest destination of poultry and egg exports from India. Other major export destinations for poultry and egg from India during the year included Japan, Germany, Maldives, Bahrain and Indonesia with shares of 10.5%, 7.6%, 6.9%, 6.4%, and 5.9%, respectively (Exhibit 4.22).

Exhibit 4.19: India's Major Export Destinations of Meat Products (2015-16)



Source: DGCIS; Exim Bank Research

Exhibit 4.20: India's Major Import Sources of Meat Products (2015-16)



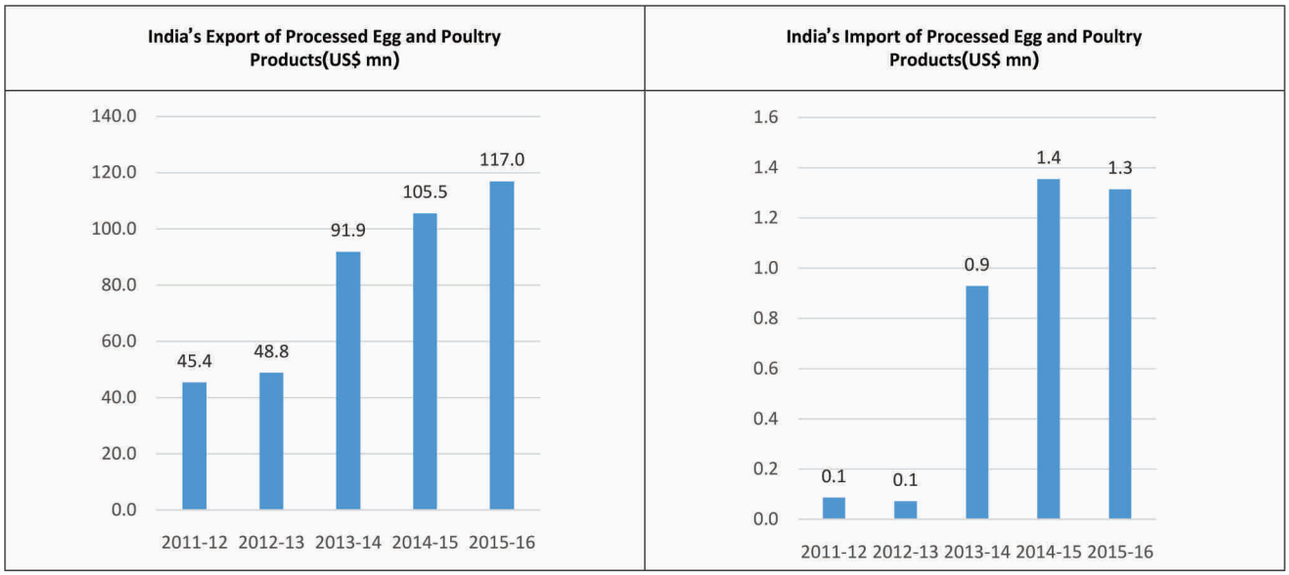
Source: DGCIS; Exim Bank Research

As far as imports were concerned, Germany was the predominant source country accounting for a share of 80.5% of India's total imports of poultry and egg during 2015-16 (Exhibit 4.23).

Dairy Products

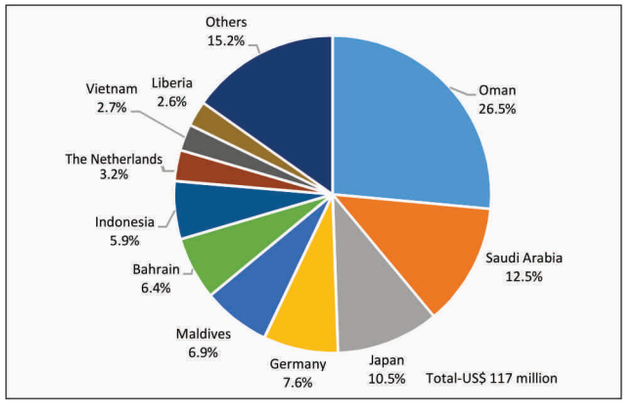
The exports of dairy products from India were estimated at US$ 115.3 million during the year 2015-16, while imports during the same period were valued at US$ 49 million. The exports of dairy products had increased significantly during the year 2013-14, however it has been declining ever since, registering year-on-year decline of 41% during the year 2015-16. On the other hand, imports recorded growth rate of 5.9%

Exhibit 4.21: India's Export and Import of Poultry and Egg



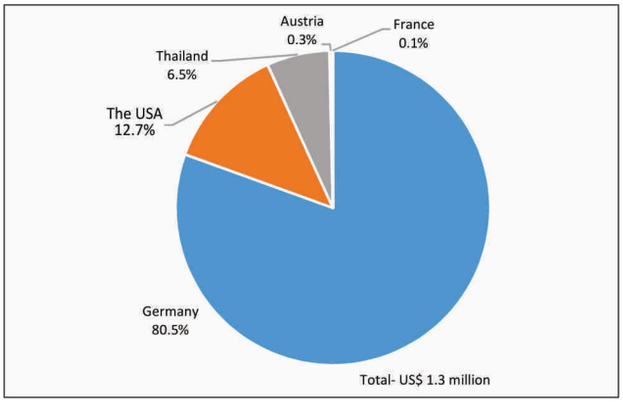
Source: DGCIS; Exim Bank Research

Exhibit 4.22: India's Major Export Destinations of Poultry and Egg (2015-16)



Source: DGCIS; Exim Bank Research

Exhibit 4.23: India's Major Import Sources of Poultry and Egg (2015-16)

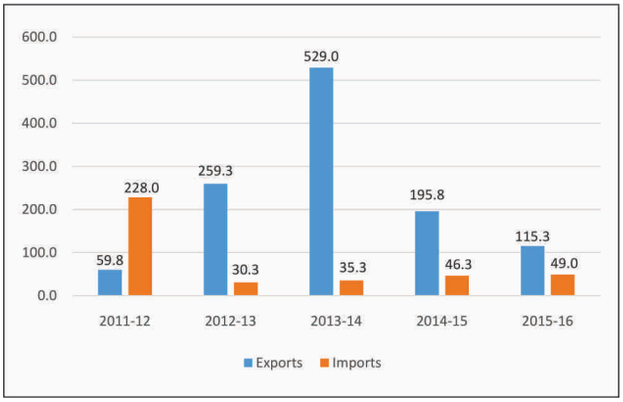


Source: DGCIS; Exim Bank Research

during the same period to amount to US$ 49.0 million (Exhibit 4.24).

UAE, with imports of US$ 27.6 million (23.9% share) was the largest export destination of dairy products from India. Pakistan was the second largest importer of dairy products and had a share of 16.1% in the aggregate dairy products exported from India during 2015-16. Bangladesh, Singapore, Nepal, Bhutan and Afghanistan were other major export destinations for Indian dairy products (Exhibit 4.25). The aggregate imports of dairy products from India during the period 2015-16 was US$

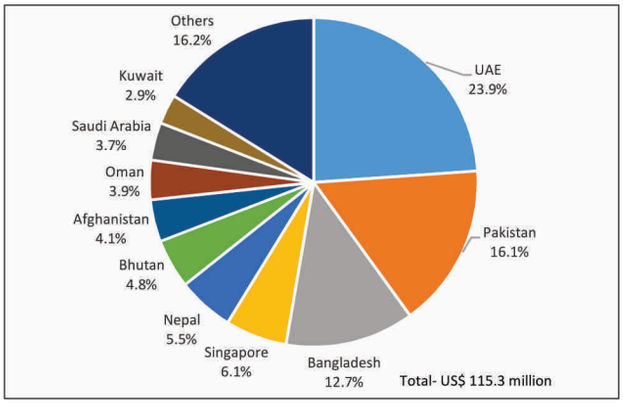
Exhibit 4.24: India's Export and Import of Dairy Products (US$ million)



Source: DGCIS; Exim Bank Research

49 million. France was the leading import source and had a share of nearly 27.5% in the total imports of dairy products. Other significant import sources for dairy products were New Zealand, Denmark, the Netherlands and Uganda (Exhibit 4.26).

Exhibit 4.25: India's Major Export Destinations of Dairy Products (2015-16)

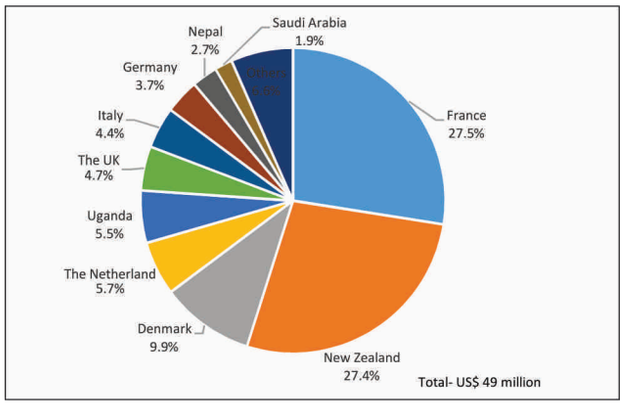


Source: DGCIS; Exim Bank Research

OTHER PROCESSED FOOD

The category of 'other processed food' includes groundnuts, guar gum, jaggery and confectionery, cocoa products, cereal preparations, milled products, processed beverages, and miscellaneous preparations, as categorised by APEDA. The exports of 'other processed foods' from India was estimated at US$ 2.9 billion during the year 2015-16, registering a decline of about 28.9% as compared to their exports in the previous year. The imports of 'other processed foods' was valued at US$ 1.1 billion during 2015-16, recording a marginal year-on-year decline of 2% during 2015-16.

Exhibit 4.26: India's Major Import Sources of Dairy Products (2015-16)



Source: DGCIS; Exim Bank Research

5. Market Identification of Processed Food for Indian Manufacturers

This chapter seeks to analyse processed food products that have substantial international demand, and the major countries importing these products. An analysis of India's exports has been undertaken at HS-6 digit classification level for processed food and their major export markets. These products have been classified on the basis of the commodity categorisation of APEDA (Agricultural and Processed Food Products Export Development Authority) and MPEDA (Marine Products Export Development Authority).

The sectors have been divided and analysis has been undertaken as per the following categories:

- Processed Fruits and Vegetables Sector
- Processed Fishery and Seafood Sector
- Processed Meat and Poultry Sector
  - Meat
  - Poultry and Egg
  - Dairy
- Other Processed Food

In the current section, the objective is on identifying products where India can enhance its exports and thereby increase its share in global exports. It is essential to identify major demand centres and the major competitors of India in these markets for such products.

Methodology

HS 6-digit levels have been identified in each of the above processed food categories for deeper analysis. The following section gives an analysis of product groups (HS 6-digit level) that are having a share of more than 1% in global imports.

PROCESSED FRUITS AND VEGETABLES SECTOR

At HS-6 digit, there are 28 commodities out of 70 commodities which have been identified **(Annexure II)**.

The world imports of processed fruits and vegetables increased from US$ 47.8 bn in 2010 to US$ 62.5 bn in 2014. At the same time, India's exports of these commodities increased from US$ 0.6 bn in 2010 to US$ 0.9 bn in 2014. Despite being a leading producer of fruits and vegetables, India's share in global exports remains insignificant.

Further analysis reveals that there are 4 products in which India has a decent share in world exports. Given India's competitiveness in these products vis-à-vis its share in world exports, the possibility for India to further enhance its exports into the major import markets remains high. These products are fruits, nuts & other edible parts of plants (HS-200899; 3.9% share in world exports), vegetables, fruit, nuts and other edible parts of plants, prepared or preserved by vinegar or acetic acid (HS-200190, 3.4% share in world exports), guavas, mangoes/mangosteens fresh/dried (HS-080450; 3.2% share in world exports), jams, jellies, marmalades, purees or pastes of fruit nes (HS-200799; 2.1% share in world exports), and vegetables & its mixtures prepared/ preserved; not frozen nes (HS-200590; 2% share in world exports).

- The world imports of fruits nuts & other edible parts of plants (HS Code 200899) aggregated US$3321 million in 2014. India was the ninth largest exporter in the world, with a share of approximately 3.9% in the world exports. The leading exporters of this product were China (14.8% share), the USA (12.4%), Thailand (8.8%), Mexico (7.5%) and Germany (4.7%). The major markets include the USA (29.5% share in word imports), Japan (8.4%), the Netherlands (7.6%), Germany (6.1%), and Canada (5.6%).
- With regard to vegetables, fruit, nuts and other edible parts of plants, prepared or preserved by vinegar or acetic acid (HS Code 200190), India had a share of 3.4% in global exports. India was the

eleventh largest exporter of this product globally. India was the second largest exporter of vegetables, fruit, nuts and other edible parts of plants, prepared or preserved by vinegar or acetic acid to the United Kingdom, second only to the Netherlands.

- India had a share of 3.2% in the exports of guavas, mangoes/mangosteens fresh/dried globally (HS Code 080450). The leading importers of these products were the USA (21.9% share in global imports), the Netherlands (11.2%), China (7.9%), Germany (7%) and the United Kingdom (7%). India was the eighth largest exporter of this product during the year 2014.
- The world imports of jams, jellies, marmalades, purees or pastes of fruit nes (HS Code 200799) was valued at US$ 2085 million during the year 2014. India ranked sixteenth in the world exports of this product, and had a share of nearly 2.1% in the aggregate exports. The major importers of jams, jellies, marmalades, purees or pastes of fruit nes were the USA (11.4%), Germany (10.8%), France (9.9%), the Netherlands (6.4%) and the United Kingdom (6.3%).
- Among the leading exporters of vegetables & its mixtures prepared/preserved; not frozen nes (HS Code 200590), India had a share of 2%, and was ranked thirteenth. The major exporters of this product were China (26.2%), Peru (8.4%), France (7.2%), Spain (6.0%) and the Netherlands (5.4%).

PROCESSED FISHERY AND SEAFOOD SECTOR

There are 23 commodities which have been identified out of a total of 103 products, whose value of imports was greater than 1% of the value of global imports of processed fishery and seafood sector **(Annexure III)**. The cumulative exports of fishery products from India has increased from US$ 2.3 bn in 2010 to US$ 5.4 bn in 2014.

- Amongst the processed fishery products identified under the 6 digit HS Code, India had the highest share of 19.5% in the world for the category frozen shrimps and prawns, whether in shell or not (HS Code-030613). The major importers of frozen shrimps and prawns during 2014 were the USA, Japan, Spain, France and Italy. India was among the key suppliers to the USA, Japan, France and Italy. The USA, the biggest importer of this product, had a share of 31.5% in global imports. India was the leading exporter of this product to the USA accounting for a share of 24.2% of the US imports of this product. Japan, the second largest importer in the world with a share of 11.8%, imported the largest amount from Vietnam (22%), followed by India (17.6%), Indonesia (17.6%), Argentina (7.5%) and Thailand (7%). Other than the USA and Japan, where India is among the top suppliers of frozen shrimps and prawns, India can also explore opportunities in other major import markets – e.g. Spain - where India does not feature among the top suppliers currently.
- India's share globally in the exports of other molluscs excluding live fresh / chilled (HS Code 030799) stood at 8.5% in 2014. The major importers of this product were Japan (24.5%), Hong Kong (22.5%), Spain (16.1%), Italy (7.7%) and China (4.7%). India was the second largest exporter of this product to Spain after Peru. India was the leading exporter of molluscs excluding live fresh/chilled nes to Italy accounting for a share of 32.9%. India has the potential to increase exports to Japan, Hong Kong, and China.
- India has good potential in the exports of cuttle fish and squids excluding live fresh/chilled (HS Code 030749) where India had a share of 6.8%. Among the key importing countries, namely Italy, Spain, China, Thailand and the USA, India was one of the main suppliers to all countries except China. Among all other major importing countries, India had the highest share of 12.7% in the market of Spain.
- Other fillets (excluding frozen) & other fish meat (HS Code 030490) is another product segment where India could increase its global presence. The major importers of this product in 2014 included Japan, Korea, Russia, Canada and Germany. However, it was only in the case of Japan that India was one of the main suppliers, with a share of 7.9% in 2014.
- The global imports of shrimps and prawns prepared/ preserved (HS Code 160520) stood at US$ 4937

million during the year 2014. The leading importers of this product were the USA (29.1%), Japan (14.6%), the United Kingdom (8.9%), Denmark (7%) and the Netherlands (5.9%). India was the fifth largest exporter of shrimps and prawns to the USA (7.9%) and Japan (1.4%). India should take measures to increase its exports of shrimps and prawns to other major markets like the United Kingdom, Denmark and the Netherlands.

PROCESSED MEAT AND POULTRY SECTOR

Meat

At HS 6 digit level, a total of 20 commodities have been analysed from a total of 52 commodities, whose share was greater than 1% in the value of global imports of processed meat products **(Annexure IV)**. World imports of meat was estimated at US$ 113.9 billion during the year 2014. India's exports of these commodities increased from US$ 1.8 billion in 2010 to US$ 5.1 billion in the year 2014.

Within the meat sector, India's share in the export of boneless meat of bovine animals, frozen (HS Code 020230) was 8.8% - the highest among the 20 identified meat sector products. The top five importers of this product were the USA, Russia, Hong Kong, Japan and Egypt. India was the fifth largest exporter of this product globally, and had a share of 8.8% in world exports. Australia, Brazil, the USA and New Zealand were the major competitors for India for this product. In Egypt, which was one of the top five importers of boneless meat of bovine animals, India was the second largest exporter with a share of 44.8%.

India had a share of nearly 1.5% in the global exports of edible offal of bovine animals, frozen (HS Code 020629), making it the ninth largest exporter of this product globally. Leading exporters included Brazil (32.1%), the USA (17.8%), Australia (16.1%), Argentina (7.9%) and New Zealand (4.6%). Hong Kong was the leading importer of this product accounting for 46.9% of the market share, followed by Mexico, Korea, the USA and Egypt. India was the fifth largest exporter of this product to Egypt with a share of 2.2% in Egypt's aggregate imports.

Dairy

An aggregate of 15 commodities have been identified from a total of 19 commodities, with value of imports greater than 1% of the global value of imports of dairy products **(Annexure V)**. India ranked eleventh in the export of fats and oils derived from milk, and dehydrated butter and ghee (HS Code 040590) and had a share of 1.4% in the global exports. The leading importers of this product were Belgium, Italy, France, China and Mexico. India is not the leading supplier to any of the key markets, and should explore opportunities to enhance exports.

In the global exports of milk and cream in powder, general or solid form containing fat not exceeding 1.5% by weight (HS code 040210), India ranked thirteenth and had a share of 1.4% in the aggregate exports. The major importers of this product were China, Mexico, Algeria, Indonesia and Malaysia. India's competitors for this product in the global market include the USA, New Zealand, Germany, France and Australia.

Poultry and Egg

Eight commodities have been identified and analysed out of 13 commodities under this category. The total imports globally of poultry and egg products was estimated at US$ 25.4 billion during the year 2014 **(Annexure VI)**. Within the poultry and egg sector, frozen cuts and edible offal of fowls of the species Gallus domesticus (HS Code 020714) was the major item of import. The leading importers of this product were Hong Kong (13%), Japan (12.2%), China (7.6%), Russia (5.3%) and the United Kingdom (4.9%). India does not have a substantial share in the export of this product. The major exporters of the product globally are Brazil (36.8%), the USA (20.8%), the Netherlands (9.4%), Poland (3.7%) and Germany (3.2%).

Table 5.1: India's Share in World Market of Processed Food

Category	Total No. of HS Codes	No. of HS Codes Identified	Total Value of World Imports (of identified products) in US$ mn	Total Value of India's Exports (of identified products) in US$ mn	Share of India in the Market
Processed Fruits and Vegetables	70	28	52395	473.6	0.9
Processed Fishery and Seafood Sector	103	23	97159	4422.2	4.6
Processed Meat and Poultry Sector					
Meat	52	20	101811	1669.4	1.6
Dairy	19	15	77891	220.3	0.3
Poultry and Egg	13	8	24695	46.8	0.2

Source: ITC Geneva; Exim Bank Research

6. Challenges

The Indian Food Processing industry has significant opportunities both in the domestic and export markets. However, there are also challenges engulfing this sector. Since the demand for processed food is on the rise, the industry needs to keep pace with the requirement by means of advanced technology and adherence to global standards of food safety. On the production side, while the major challenge is low productivity in this sector, at the post production stage, the wastage rate is very high. There are various other obstacles which are hampering growth in this sector which include limitations in infrastructure, skilled manpower, research and development and access to finance. This chapter attempts to assess the various challenges faced by the food processing sector in India.

Table 6.1: Challenges in the Food Processing Industry

1.	Low Productivity of Agricultural Produce
2.	Slow Implementation of Agricultural Market Reforms
3.	Supply Chain Issues in Food Processing Industries
4.	Inefficient and Inadequate Cold Chain Infrastructure
5.	Wastage of Agricultural Produce
6.	Infrastructural and Logistics Issues
7.	Insufficient Value Addition in Agricultural Produce
8.	Limited Availability of Finance
9.	Tax Structure
10.	Limited Availability of Skilled Manpower
11.	Insufficient Innovation
12.	Inadequate Ease of Doing Business

Source: Exim Bank Research

Low Productivity of Agricultural Produce

One of the major challenges faced by the food processing industry in India is the low productivity of agricultural produce. In spite of being among the leading producers of food and having a strong agricultural base, India lags considerably in terms of productivity when compared to other countries. With the objective of improving the food processing sector, it is of vital importance to enhance the productivity of raw materials in this sector. For the food processing industry to grow, the concerns towards productivity of raw material has to be addressed.

The average productivity of a majority of fruits, vegetables and other agricultural produce is low in India in comparison to the international standards. An increase in agricultural productivity requires the usage of improved varieties of seeds and technology. The productivity growth of crops in India is negatively affected by the sluggish growth in technological advancement coupled with the slow rate of dissemination. The most critical issues in this regard include irrigation and water management, need for increase in quality seed usage, improved disease and pest management and the need to focus on technology which is suited particularly for small and marginal land holdings.

A comparison of the production and yield of rice, wheat and horticultural crops has been done. Although India is the second largest producer of wheat globally, the yield of wheat in India is relatively low when compared to major producers like China, France and Germany and is even lower than the world average which stood at 3289 kg/ha (as against 3029.5 kg/ha for India).

India is the second largest producer of rice in the world and contributes approximately 21% to the total

production. However, the productivity of rice in India (3584.5 kg/ha) is significantly lesser than the global average (4556.9 kg/ha). Among the top 10 producers of rice in the world, the yield of only Thailand was lower than that of India during 2014, with countries such as Indonesia (5134.8 kg/ha), Bangladesh (4622.6 kg/ha) and Vietnam (5753.8 kg/ha) having much higher productivity.

India was the second largest producer of potatoes after China in 2014, with the productivity at 22922.4 kg/ha being marginally higher than the world average (20051.1 kg/ha). Notwithstanding this, the productivity of potatoes in India is less than half of the yield of potatoes in countries like USA (47150.7 kg/ha), Germany (47415.4 kg/ha), France (47943.5 kg/ha) and the Netherlands (45660.2 kg/ha).

However, India's productivity of bananas (37037 kg/ha) stood greater than the global average (21160 kg/ha).

Table 6.2: Top 10 Producers of Wheat in the World

Countries	2014	
	Production	Yield
	(million tonnes)	(kg/ha)
China	126.2	5048.3
India	94.5	3029.5
Russia	59.7	2497.6
The USA	55.4	2943.8
France	39.0	7356.7
Canada	29.3	3094.6
Germany	27.8	8629.6
Pakistan	26.0	2824.1
Australia	25.3	2006.1
Ukraine	24.1	4011.9
World	**729.0**	**3289.0**

Source: FAO; Exim Bank Research

Table 6.3: Top 10 Producers of Rice in the World

Countries	2014	
	Production	Yield
	(million tonnes)	(kg/ha)
China	208.2	6815.2
India	157.2	3584.5
Indonesia	70.8	5134.8
Bangladesh	52.3	4622.6
Viet Nam	45.0	5753.8
Thailand	32.6	3058.6
Myanmar	26.4	3891.5
Philippines	19.0	4001.9
Brazil	12.2	5201.3
World	**741.5**	**4556.9**

Source: FAO; Exim Bank Research

Table 6.4: Top 10 Producers of Potatoes in the World

Countries	2014	
	Production	Yield
	(million tonnes)	(kg/ha)
China	96.1	17021.8
India	46.4	22922.4
Russian Federation	31.5	14990.2
Ukraine	23.7	17644.7
The USA	20.1	47150.7
Germany	11.6	47415.4
Bangladesh	9.4	19030.5
France	8.1	47943.5
Poland	7.7	27766.1
Netherlands	7.1	45660.2
World	**385.1**	**20051.1**

Source: FAO; Exim Bank Research

Table 6.5: Top 10 Producers of Banana in the World

Countries	2014	
	Production	Yield
	(million tonnes)	(kg/ha)
India	29.7	37037
China	11.8	30081
Philippines	8.9	20067
Brazil	7.0	14524
Indonesia	6.9	51186
Ecuador	6.8	37090
Guatemala	3.6	49888
Angola	3.5	27436
United Republic of Tanzania	3.2	6317
Costa Rica	2.2	51235
World	**114.1**	**21160**

Source: FAO; Exim Bank Research

Irrigation and Water Management Issues

Water is a vital component in the growth of crops, and the yield of crops depends extensively on the irrigation facilities available. The provision of high yielding seeds and efficacy in the use of fertilizers might not turn fruitful if there is inadequate quantity of water. Owing to the rise in urbanisation and the rising income of people, a change in the composition of food basket has been observed over the years. The intake of high value agricultural commodities such as fruits and vegetables, meat products, poultry, fish and milk has been rising. Most of the fruits, vegetables and livestock products are more water intensive as compared to cereals other than rice[10].

Moreover, as per statistics, approximately 55 percent of the area under agricultural cultivation in India does not have the provision of irrigational facilities. This in turn increases the risk of crop failure especially in water scarce areas. As per the international norms, a country is classified as Water Stressed and Water Scarce if per capita water availability goes below 1700 m^3 and 1000 m^3, respectively. With 1544 m^3 per capita water availability, India is already a water-stressed country and moving towards turning water scarce[11].

Limited Efforts in Research and Development

R&D in agriculture plays a crucial role in increasing productivity and enhancing sustainability in production of crops. The need for development of better quality high yielding seeds, an efficient plant disease forecast system and effective post-harvest management can be fulfilled by appropriate and adequate research and development activities.

Stable and sustainable levels of funding are vital in supporting agricultural research required for increasing agricultural productivity. The spending on R&D as a share of agricultural GDP has fallen from 0.34% in 2000 to 0.30% in 2014. As per a report by International Food Policy Research Institute (IFPRI), India spent 0.30% of the agricultural GDP on agricultural research, which was only half the share invested by China (0.62%) and one-sixth of Brazil (1.8%). India has the potential to develop agricultural research facilities; however, that is possible only with enhanced focus on financial commitment towards research.

There is a scope for further development in this sector. Some of the obstacles faced in this regard are:

- Need for better human resources in agricultural research organisations and requirement for increase in efficiency of existing employees. More than 95 percent of the agricultural scientists are in public institutions with an average track record[12]. In Indian Agricultural State Universities, scientists engage themselves in research, teaching as well as extension services, which involves transfers across various centres. This creates hurdles for specialisations in particular fields which impedes the quality of research.

[10,11]Raising Agricultural Productivity and Making Farming Remunerative for Farmers
[12]Indian Agricultural R&D: An Introspection and Way Forward

- The non-availability of appropriate research infrastructure is another obstacle affecting productivity of crops in India. In the Agricultural National Research Systems (NARS), ICAR institutions are facilitated with updated technological advancements, however this is not the case in the zonal research stations which are situated in comparatively remote areas. Moreover, the state agricultural universities face the problem of limited funding, causing impediments in expansion of technological developments.
- There are also limitations of appropriate documenting and recording of experimental data on crop breeding, management of plant nutrients, weed and soil fertility. There is no systematic and comprehensive compilation of innovations in spheres other than breeding (Vaidyanathan, 2010). There is an urgent need for preparing and maintaining a detailed comprehensive evaluation of data related to these research projects which can bolster further analysis in this regard.

Dearth of Extension Services

A deterioration has been noted in the quality of extension services in India. An agriculture extension service provider gives talks, guidance and actual demonstrations on latest technologies related to agriculture. He also works with other experts in agriculture to learn more or even develop new methods that could advance production. However, extension service providers are often reported to have limited knowledge related to technology solutions and post-harvest management. The limitations in the efficient functioning of these workers has posed a major hurdle in the growth of agricultural productivity.

- Farmers need a wide range of support covering technical, organizational, marketing and entrepreneurial aspects. Without such an integrated support, new knowledge cannot be applied in practice. Though contract farming performed by agri-business companies do provide some kind of integrated support, they do not focus on farmer organizational development. The importance of providing this integrated support to producers by extension has been articulated by the Working Group on Agricultural Extension for the XIIth Plan constituted by the Planning Commission[13].
- Inadequate technical support has led to inefficiency in the services of extension workers. It has been noted that research majorly provides generic technical recommendations for problems faced by farmers. However, it cannot be ignored that the natural resource base differs greatly in different parts of the country, and there are various types of farming systems and methodologies of cultivation. Thus along with a holistic approach, detailed in-depth information and suggestions should be provided to farmers with regard to their respective socio economic condition and method of production.
- The limited amount of human and financial resources also pose a challenge to the extension service provided in the field of agriculture.
- Extension services are majorly performed by the lower level functionaries of the State Level Directorates, who in spite of being qualified in agriculture, lack the first hand farm level experience and observance and therefore are inefficient in dealing with the farm level problems experienced by the farmers.
- It has been reviewed that due to the dearth of information, extension workers often propose to the farmers to get advice and suggestions to tackle their problems directly from ICAR, State Agricultural Universities and Krishi Vigyan Kendras. However, it should be pointed that ICAR and SAU have the function of extension education rather than provision of direct education services[14].

[13]Agricultural Extension In India: Current Status And Ways Forward
[14]Exim Bank Study: Indian Horticulture-Imperatives to Enhance Trade from India

Lack of Implementation of Agricultural Marketing Reforms

The potential benefits from agriculture have remained largely untapped, and there exists a wide difference between the prices paid by the consumers and those received by the farmers. The provisions of the State Agricultural Produce Marketing Committee Acts prevented the creation of competitive conditions for the sale and distribution of commodities. Moreover, multiple layers of intermediation led to rise in prices. However, during the year 2003, the Central Government formulated a model APMC Act for adoption by the States. While in principle, the model APMC Act provides greater freedom to the farmers to sell their produce directly to the markets set up by the private entities, they are still required to pay market fee to the notified APMCs, even if they provide no services, in addition to the fee charged for providing trading platform and other services like loading, unloading, grading, weighing etc.

The State of Maharashtra amended its APMC Act, and allows private traders and corporates to buy fruits, vegetables and other farm produce, under the direct marketing license system. Moreover, during 2016, Maharashtra de-listed fruits and vegetables from the

Table 6.6: State-Specific Market Reforms in Agriculture

Area of Marketing Reforms	States/Union Territories which adopted the Reform
Establishment of private market yards/ private markets managed by a person other than a market committee	Andhra Pradesh, Arunachal Pradesh, Assam, Chhattisgarh, Gujarat, Goa, Himachal Pradesh, Jharkhand, Karnataka, Maharashtra, Mizoram, Nagaland, Orissa (excluding paddy / rice), Rajasthan, Sikkim, Telangana, Tripura, Punjab, Uttarakhand, West Bengal & Chandigarh
Establishment of farmer/consumer market by a person other than Market Committee (Direct sale in retail by the farmers to the consumers)	Arunachal Pradesh, Assam, Chhattisgarh, Gujarat, Goa, Himachal Pradesh, Jharkhand, Karnataka, Maharashtra, Mizoram, Nagaland, Rajasthan, Sikkim, Tripura, Uttarakhand & West Bengal
Direct wholesale purchase of agricultural produce by processors/ exporters/ bulk buyers, etc at the farm gate	Andhra Pradesh, Arunachal Pradesh, Assam, Chhattisgarh, Gujarat, Goa, Haryana (with collection centres for specified crops), Himachal Pradesh, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Mizoram, Nagaland, Punjab, Rajasthan, Sikkim, Telangana, Tripura, Uttarakhand, West Bengal & Chandigarh
Provision for Contract Farming	Andhra Pradesh, Arunachal Pradesh, Assam, Chhattisgarh, Goa, Gujarat, Haryana, Himachal Pradesh, Jharkhand, Karnataka, Maharashtra, Madhya Pradesh, Mizoram, Nagaland, Orissa, Punjab (separate Act), Rajasthan, Sikkim, Telangana, Tripura & Uttarakhand
Unified single license/registration for trade transaction in more than one market	Andhra Pradesh, Goa, Gujarat, Haryana, Himachal Pradesh, Karnataka, Rajasthan, Chhattisgarh, Madhya Pradesh, Maharashtra, Mizoram, Nagaland, Sikkim & Telangana
Provision for e-trading	Andhra Pradesh, Chhattisgarh, Gujarat, Jharkhand, Haryana, Himachal Pradesh, Karnataka, Rajasthan, Sikkim, Goa, Madhya Pradesh, Maharashtra (license to Commodity Exchanges registered under Forward Market Commission), Mizoram, Telangana and Uttarakhand
Single point levy of market fee across the State	Andhra Pradesh, Chhattisgarh, Gujarat, Goa, Himachal Pradesh, Karnataka, Madhya Pradesh, Mizoram, Nagaland, Punjab, Rajasthan, Sikkim, Telangana, Uttarakhand, Uttar Pradesh, Jharkhand & Chandigarh

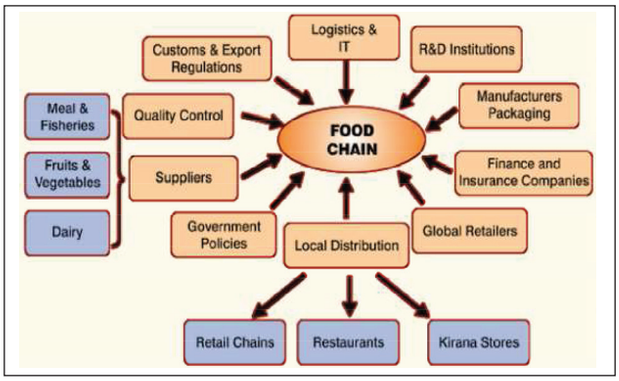
Source: Ministry of Agriculture and Farmers Welfare; Govt. of India

APMC's Schedule. However, Uttar Pradesh has not implemented any of the major features of the model APMC Act, except allowing direct procurement of food grains (primarily wheat) by big players, on the condition that total procurement in a season should be at least 50,000 tons. Notifications are issued every year; however, reforms are not undertaken by many States.

Supply Chain Issues in the Food Processing Industry

The supply chain in the food processing industry involves the engagement of various stakeholders which include farmers, seed growers, merchants, transporters, wholesalers, retailers, financial institutions and the insurance companies.

Exhibit 6.1: Supply Chain in Food Processing Industry



Source: Improving India's Food Supply Chain; N Viswanadham

The supply chain in the food processing industry is substantially complex which can be attributed to the perishable nature of food, especially fruits and vegetables and the participation of innumerable stakeholders. It is of paramount importance to comprehend the various components of the food chain well and evaluate opportunities for improvement and execute appropriate measures to augment competence.

Limitations in the Quality of Produce

Various farmers in India are not adequately trained and educated which is the leading cause of insufficient attention towards the quality of produce. The limited awareness regarding the modern technological practices and information regarding integrated nutrient management are essential in ensuring the nutritional benefit of the produce. In the rapidly globalising world, consumers are health conscious and display preference for low-input method of agricultural production and minimal use of pesticides. The usage of fertilisers and pesticides have been associated with significant health and environmental hazards. Thus, it has become vital for farmers and cultivators to give utmost importance to food quality and safety.

Inadequate Focus on Food Safety

Over the years, there has been a radical rise in the consumer's interest with regard to the subject of food safety. Food consumption is highly monitored in terms of farming practices involved, the usage of growth hormones in livestock, the method of processing, the quantity and quality of food additives and preservatives employed in the process, as well the level of freshness of the food product. At the same time, contamination in processed foods is also an area of concern.

The lag in implementation of laws and enforcement of safety standards, worsened by inadequately staffed regulatory authorities, have led to instances of hazardous residual elements in food.

The supply chain of food in India is long and does not involve the usage of modern technology leading to immense wastage and higher chances of contamination prior to delivery. The application of various pesticides are done frequently to enhance the appearance and taste of food leading to a compromise on the quality of food, which ultimately results in them being banned in the international markets. Thus, it is exceptionally important to scan and supervise the hygiene of food across various levels of the food chain. Hence, there is an urgent need for an improvement in the food safety standards and reforms in the food safety laws at all levels of the supply chain to ensure supply of good quality food to the consumers.

There have been instances of Indian snacks being rejected because of the usage of certain pesticides which have been banned in the United States, although there is no restriction on their usage in India. According to industry sources, multinationals cannot source fresh green beans which are utilised in preparing instant noodles from India due to the inclusion of pesticides. The beans are consequently imported from the US, and the processing of noodles take place in India, followed by exports.

In the EU, there have been 172 notifications against Indian peanut and peanut products in the EU's Rapid Alert System for Food and Feed (RASFF) portal during the period March 8, 2004 to April 30, 2016. It was during the month of May in the year 2014, that the EU banned the exports of fresh mangoes from India caused by the presence of fruit flies. Following this, corrective action was taken which led the ban to be lifted during March 2015. There are various Indian vegetables which have been banned in the EU, driving revenue loss for the producers and exporters. Appropriate action should be taken in this regard, as this is causing India to lose its market share in the EU and the US, and these regions are eventually importing from other developing countries such as Kenya, Brazil and Uganda.

One of the major reasons for the rejection of Indian agricultural exports in developed countries has been the imprudent use of fertilisers and pesticides at the farm level and the limited use of good agricultural practices (GAP). According to industry estimates, there are 67 pesticides which have been banned in the US, the EU and other nations, however, their application is still allowed in India. Certain examples of these pesticides are carbosulfan, chlorpyriphos, endosulfan and quinalphos. If farmers continue the application of these pesticides in the fresh or processed form, the food products will have traces of these chemicals which will cause barriers to trade in the US, the EU and Japan[15].

Under Equipped Laboratories

Additionally, the food safety labs in India are not able to keep pace with the increasing changes and demands of the food processing industry. The equipment in the food testing laboratories are not upgraded and the labs themselves are highly understaffed, thereby resulting in inefficiency. Moreover, food testing laboratories often face the pressure of approval by the food packaging and processing companies. Since food is a state subject, policy changes taken at the Centre may not get implemented at the State level, resulting in a dichotomy.

Ambiguity in Food Standards

While the comprehensive new food safety rules have come into effect, there is still ambiguity, limitations of dialogue and well-articulated framework when it comes to rules and regulations regarding the food industry. Limited consumer awareness on food quality parameters benefits the unorganized segments. Hence there is a need to increase the awareness on food quality and related issues[16].

Another obstacle with regard to food safety is that the nodal agency for food safety in India, FSSAI, can regulate the domestic market and imports, but does not monitor exports. As a result, FSSAI does not engage in ensuring traceability of food products from the farm level to the consumer. Nevertheless, Agricultural and Processed Food Products Export Development Authority (APEDA), set up to promote agricultural and processed food products, has taken up the role to set up a traceability system known as the Tracenet for various products such as grapes, mangoes and peanuts. Contrary to the situation in India, in many developed countries, the food safety authorities have a comprehensive control over the farmers, exporters, importers and the domestic market along with following a uniform food safety standard for the domestic as well as the export

[15]FNB News
[16]CII-Rabo Equity Report

market. In India, dual standards have been maintained – exports from India have to adhere to the standards set by the importing country, while imports and products targeted for the domestic market have to be in accordance to the standards specified by the FSSAI. The FSSAI is making efforts to peg its standards with the Codex Alimentarius, although the EU and the US have more stringent standards comparatively[17].

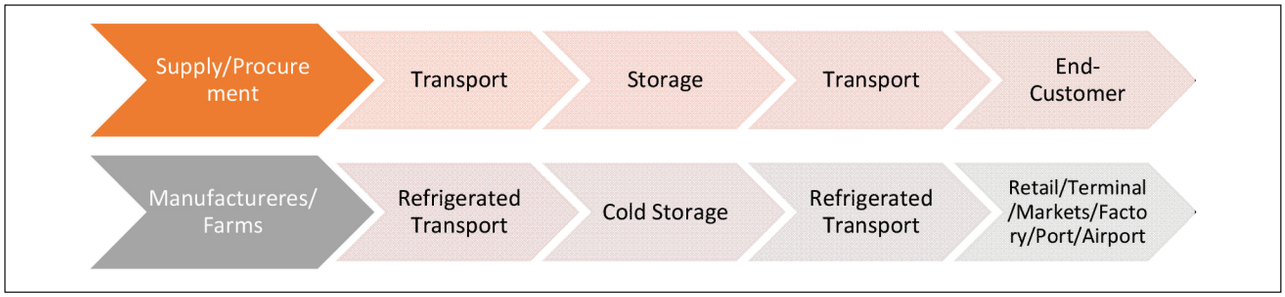
Inadequate and Inefficient Cold Chain Infrastructure

Storage of food product is one of the crucial stages in the processed foods value chain. The absence of appropriate cold chain facilities can lead to substantial food wastage and losses to the firm. Cold chain infrastructure involves the storage and transportation of food, ensuring an augmentation in the shelf life of food and maintenance of its quality. It includes both storage as well as transportation of food under optimal temperature conditions in order to prevent spoilage and preserve the nutritional value and freshness of food items.

In India, a considerable quantity of fruits, vegetables and other perishable food items are wasted owing to lack of appropriate cold storage facilities. The change in consumption pattern and increased demand for processed food has put a lot of pressure on the existing cold chain infrastructure, which is not robust enough to meet the growing demand. On its part, the Government reportedly expects to sanction around 100 cold chain projects in 2017-18 as compared to 81 such projects that have been sanctioned by the Ministry of Food Processing Industries, Govt. of India, since 2013-14.

According to the National Centre of Cold Chain Development (NCCD), Government of India, as at end March 2014, the total number of cold stores in India were 7000, with an aggregate holding capacity of 32 million tons. During the year 2015 (upto December), an additional 238 projects of capacity 1.04 million tons were created. The status of Cold Chains in India is tabulated below.

Exhibit 6.2: Supply Chain in Cold Chain Market



Source: Technavio Analysis

Table 6.7: Cold Chain Infrastructure Capacity in India: Evaluation of Gaps

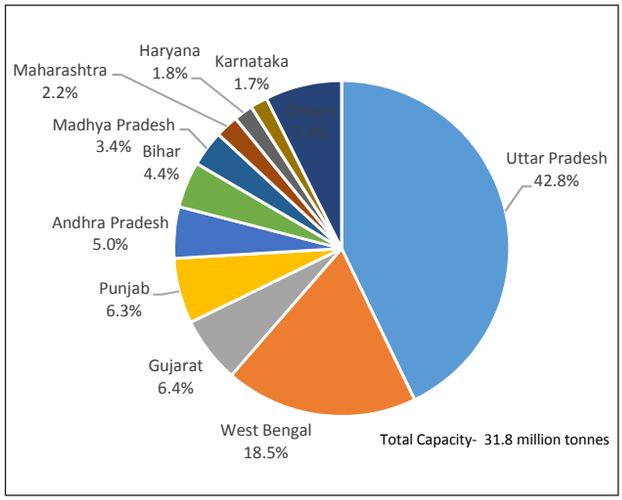
Type of Infrastructure	Infrastructure Requirement (A)	Infrastructure Created (B)	All India Gap (A-B)
Cold Storage (mn tons)	35.1	31.82	3.28
Pack-house (in no.)	70080	249	69831
Refer Vehicles (in no.)	61826	9000	52826
Ripening Chambers (in no.)	9131	812	8319

Source: National Centre for Cold Chain Development, Government of India

[17]FNB News

The cold storage facilities available in India have been mostly for the storage of potatoes. Nevertheless, the creation of multi-purpose cold storage is also on the rise. Nearly 60% of the total cold storage capacity is concentrated in the states of Uttar Pradesh and West Bengal, wherein majority of the cold storages are for the storage of potatoes. As per the Ministry of Food Processing Industries, Govt. of India, approximately 75% of the total cold storages in India are for single commodities (mostly potatoes) and 25% are multi commodity cold storages.

Exhibit 6.3: Major Cold Storage facilitated States in India (as on March 2014)



Source: National Centre for Cold-chain Development, Govt. of India

Unfortunately, other States continue to face hurdles with regards to capital for investments for this purpose. The limitations of appropriate storage facilities poses a grave issue in the food processing industry. The current scenario of the cold chain infrastructure is not adequate to meet the requirements of the industry. Consequently, the Government is encouraging private participation through various subsidies schemes and grants, and sometimes restructuring the existing ones[18]. Moreover, with regards to investments in this sector, 100% FDI is allowed under the automatic route.

Limited knowhow of labour - It has been observed that a majority of the refrigerated transport in India is operated by small sized and non-integrated firms, the employees of which do not use appropriate management practices. The technical knowhow of employees needs to be upgraded for development.

Limited level of backward and forward linkages to supplement cold chain - The supply chain of a majority of agri products in India is long, fragmented with huge gaps and poorly integrated, in capacity as well as integration terms. Critical linkages like reefer transport and on farm infrastructure are almost non-existent.

Low level of demonstrated success in viability of cold chain projects - In India, cold chain projects are characterised by large volume of capital infusion and an extended payback period for the investment. Additionally, cold chain projects require the need for rigorous marketing and investment in backward and forward linkages. All these factors discourage potential investors.

High Capital Investment - The initial phase in establishing of cold chain requires sizeable amount of investment which dissuades investors. The entry by institutional investors is also limited causing inadequate cold chain facilities in India.

High cost of Power and Fuel - The operational cost in India are high in comparison to other countries, acting as a major barrier. As per Technavio Analysis, the energy expenses in cold chain in India account for approximately 29.9 percent of the total expenses incurred in operating cold chain storage, as compared to 10 percent in the United States. Moreover, the widespread instances of power cuts in various regions lead to higher investment in the form of power backups.

Deficient Cold Chain Logistics Provision - The cold chain logistics are considerably fragmented. Moreover, the

[18]To avoid duplication, the sectoral & regional focus of NHM (National Horticultural Mission) and NHB (National Horticultural Board) - (the two sub-schemes under MIDH – the Mission for Integrated Development of Horticulture) were segregated. NHM operates as a Central Sector Scheme with States contributing 40% of the subsidy (10% in case of North-East States) and NHB functions as a Centrally Supported Scheme without contribution at state level. Both support programs allow subsidy to projects after physical creation of infrastructure (50%) and remaining after operationalising of infrastructure.

small scale agricultural fields are scattered and spread across remote areas causing a supply chain gap.

Unavailability of appropriate infrastructure and finance- The cold chain industry is capital-intensive with significant requirement of investment in infrastructure, followed by requirement of finance for maintenance of systems. The technology used is obsolete in many cases and there is dire need for upgradation, all of which require adequate and competitive access to finance.

Regional Concentration - Most of the cold chains in the country are concentrated in the states of Uttar Pradesh, West Bengal, Maharashtra and Punjab. Furthermore, these cold chains are designed for single commodity such as potato and banana leading to ineffective capacity utilization.

Table 6.8: Some Areas of Cold Chain Intervention

Commodity	Potential States	Indicative Interventions
Apples	Himachal Pradesh, Delhi NCR, J&K, Uttarakhand, Mizoram, Arunachal Pradesh, Sikkim	Controlled Atmosphere (CA) Store, reefers, pre cooling solutions at farm level
Mangoes	Andhra Pradesh, Gujarat, Maharashtra	Ripening chambers, cold storage/ controlled atmosphere storage for mango, cold chain for mango pulp
Kiwi	Arunachal Pradesh	Cold chain, modern pack house
Onion	Gujarat, Maharashtra	Technology for long term storage of onion
Banana	Gujarat, Andhra Pradesh, Tamil Nadu, Maharashtra	Modern pack house and ripening chambers
Potato	Uttar Pradesh, West Bengal, Punjab	New technologies for storage of processing, grading of potato, upgradation of existing cold chain
Fish	Andhra Pradesh, Gujarat, Kerala, Tamil Nadu, West Bengal, Odisha, Manipur, Mizoram	Cold storage and transportation, pre cooling infrastructure, freezing units-IQF (Individual Quick Frozen Freezer), plate freezers, blast freezer and freezer cold storages
Meat	Andhra Pradesh, Kerala, Maharashtra, Uttar Pradesh, Nagaland, Assam and other North Eastern states	Modern abattoirs and cold chain for meat and meat products
Dairy	Pan India	Processing plants for high value dairy products, low cost technology for chilling milk at farm level and insulated vehicles

Source: Ministry of Food Processing Industries, Govt. of India

Wastage of Agricultural Produce

The post-harvest losses of agricultural produce requires utmost attention in India. The usage of productive practices in cultivation, appropriate harvesting techniques, efficient storage and suitable transport facilities attribute to the development of quality produce for consumption. In the food processing supply chain, post-harvest losses can be enormous and can occur at various stages of the supply chain including in the field, while transportation, in processing and packaging, and even while storage, as well as in the wholesale and retail markets.

According to the Ministry of Food Processing Industries (2016), India produces more than 400 million metric tonnes of perishables every year which includes horticultural produce, dairy, meat, poultry and fish. According to the study by the Central Institute of Post-Harvest Engineering and Technology (CIPHET), the wastage levels of food in India are significantly high (4.6%-15.9% in fruits, 5.2% in inland fish, 10.5% in marine fish, 2.7% in meat and 6.7% in poultry). CIPHET has estimated the annual value of harvest and post-harvest losses of major agricultural produces at national level to be of the order of Rs. 92,651 Crore calculated using production data of 2012-13 at 2014 wholesale prices.

Table 6.9: Annual Wastage of Agricultural Produce, Milk, Meat, Marine and Poultry Products

Commodity/ Crop	Losses during Transportation (%)	Losses during Farm Operations (including transportation loss) (%)	Losses during Storage (%)	Overall Total Loss (%)	Value of the loss (Rs. crore)
Milk	0.02	0.71	0.21	0.92	4409
Meat	0.00	1.99	0.72	2.71	1235
Marine Fish	0.91	9.61	0.91	10.52	4315
Inland Fish	0.17	4.18	1.05	5.23	3766
Egg	0.36	4.88	2.31	7.19	1320
Poultry Meat	0.66	2.74	4.00	6.74	3942
Cereals				4.65-5.99	20698
Pulses				6.36-8.41	3877
Oilseeds				3.08-9.96	8278
Fruits & Vegetables				4.58-15.88	40811

Source: Central Institute of Post-Harvest Engineering and Technology

Infrastructural and Logistics Issues

A major movement of agri produce happens by road transport which continues to have infrastructural issues. There is a problem of congestion in national highways and the capacity to handle vehicles carrying bulky and heavy goods is less. Moreover, there are problems of connectivity which are exacerbated by high logistics cost and inappropriate fleet management. On various occasions, the delivery is not timely which adds to the existing challenges.

As compared to the international logistics network, India's logistics network lags is relatively under developed leading to an increase in operational cost, more investment of time and lack of certainty in profit making. This is reflected in India's low ranking of 35 in the World Bank's Logistics Performance Index (on the positive side, the ranking has improved significantly from 54th in 2014).

The rapid industrialisation and increase in economic growth is putting pressure on the already exhausted network. Special emphasis needs to be laid on bulk handling of food products and augment the efficiency of cargo handling at major ports as well as transportation of cargo by air, in order to ensure safe delivery of quality produce in domestic and global markets. There is a requirement for ample investment in upgradation of technology and advancement in these areas in accordance with the expansion and progress globally in other developed nations.

Need for Production of Value- added Agri Produce, meeting International Demand

In the rapidly globalizing world, the preferences of people towards the food basket has been changing. The demand for cereals has been declining consistently, while that of milk, and milk products, meat, egg fruits and

Table 6.10: Logistics Performance Index: The World Bank

Country	2016		2014		2012	
	Rank	Score	Rank	Score	Rank	Score
Germany	1	4.23	1	4.12	4	4.03
Luxembourg	2	4.22	8	3.95	15	3.82
Sweden	3	4.20	6	3.96	13	3.85
The Netherlands	4	4.19	2	4.05	5	4.02
Singapore	5	4.14	5	4.00	1	4.13
Belgium	6	4.11	3	4.04	7	3.98
Austria	7	4.10	22	3.65	11	3.89
The United Kingdom	8	4.07	4	4.01	10	3.90
Hong Kong	9	4.07	15	3.83	2	4.12
The United States	10	3.99	9	3.92	9	3.93
India	35	3.42	54	3.08	46	3.08

Source: World Bank

beverages is on the rise. Moreover, the family structure has been changing globally, with a rise in nuclear family households, increased participation of females in the work force and an expansion in the number of working hours causing a rise in the ready to eat food category. Additionally, there has been increased mobilisation in the work field which involves rise in travel across the world, for work purposes, which leads to a demand for foods which fulfil the international standards of quality.

There is a requirement for the food supply chain to be adaptive in accordance to the consumer demands. Globally, countries are into the practice of sourcing raw materials from India, while they engage in processing in their respective country, which has been the case in tea, spices and various other commodities. Moreover, India imports certain finished goods such as processed juices and oils, which could possibly be prepared by using the domestic resources. Thus, it is imperative that there is a change in focus for the food processing industry. Indian food processors undertake production of low value added produce with the objective of meeting the demands of the domestic market. Nevertheless, the food processing industry should aim to produce globally suited value added products in order to increase exports and bring about a rise in earnings.

Limitations of Finance

The availability of finance is considered another major constraint in the development of the food processing industry. The establishment of a food processing unit is capital intensive caused by the considerable initial capital requirement. The requirement of working capital in these industries are high owing to the volatility in the availability of raw materials caused by seasonal factors. The RBI has classified loan to food and agro based processing units and cold chain under agriculture activities for Priority Sector Lending subject to aggregate sanctioned limit of INR 100 crore per borrower from the banking system, in order to encourage the setting up of food processing units. However, the procedural hurdles involved in obtaining credit from financial institutions acts as a drawback in the development of the industry. As is evident from Table 6.11, the credit flow to the food processing sector (outstanding as on end March) declined in absolute value during 2015-16 by as much as 12.5%, thereby resulting in a decline in the share of the sector in total bank credit to Industry.

Table 6.11: Credit Flow to Food Processing Industry

Year	Credit Flow to Food Processing Industry (outstanding as at end March) in Rs. billion	Share in Total Gross Bank Credit to Industry (%)
2010-11	768.4	4.8
2011-12	941.5	4.9
2012-13	1173.7	5.3
2013-14	1462.5	5.8
2014-15	1715.0	6.5
2015-16	1500.9	5.5

Source: RBI

Tax Structure

In order to have cost competitiveness, it is essential for the price of processed food to be affordable. It is the taxation included in the processed food which leads to an increase in the cost, and ultimately affects its demand among consumers.

The taxation in certain states stands at 20%. On processed foods, there is the impact of value-added tax (VAT) and excise, which, on an average, is 25% (peak 40%). That means when a consumer buys a product for Rs 100, actually he is paying Rs 25 tax, which is a very big barrier[19]. For sales of food products, actually there is taxing of value addition, and hence is detrimental to the benefit of farmers and consumers who will not undertake value addition (and hence crops may get perished without processing them). Today, processed

[19]FNB News

foods are not luxuries but necessities and should be taxed at par with agri produce with zero or minimum tax.

The high rates of taxation makes the good less competitive in domestic as well as the global market. The heavy excise duties and exorbitant rates of taxation require attention. Multiple taxes are levied on agricultural commodities in different states in the form of market fee, sales tax etc.

It is imperative that the processed food from India should be reasonably priced through the rationalization of tax regime. The implementation of the GST will have a major impact on the food processing industry as it will be a single tax, avoiding the cascading effect of multiple taxes, causing only the value added to be taxed at each stage. In this regard, the implementation of GST would help resolve these issues, although the GST on food processing needs to be at the lowest slab[20].

Limited Availability of Skilled Manpower

The performance of the food processing sector is highly contingent upon the availability of talent pool in the country in order to maintain its position worldwide. It is the dearth of skilled specialists which create an obstacle in the process of product development and innovation in the food processing industry. The limited availability of quality control specialists has led to the agricultural products from India being rejected in the global markets. There is a mismatch between the supply and demand of skilled professionals, which needs to be addressed in order to enhance India's competence in the food processing sector.

Table 6.12: India's Ranking in Global Competitiveness Index 2016-17

Secondary Education Enrollment Rate			Tertiary Education Enrollment Rate		
Country	**Rank**	**Value**	**Country**	**Rank**	**Value**
Belgium	1	164.8	Greece	1	110.2
Finland	2	145.5	Korea	2	95.3
Australia	3	137.6	Spain	3	89.1
Sweden	4	132.9	Finland	4	88.7
The Netherlands	5	132.3	The United States	5	86.7
India	102	68.9	India	93	23.9
Quality of Education			**Extent of Staff Training**		
Switzerland	1	6.2	Switzerland	1	5.7
Singapore	2	5.9	Norway	2	5.5
Finland	3	5.7	Singapore	3	5.5
Belgium	4	5.6	Sweden	4	5.5
Qatar	5	5.6	Luxembourg	5	5.4
India	29	4.5	India	30	4.6

Source: Globle Compitituness Report 2016-17

[20]CII-Rabo Equity Report

The Global Competitiveness Report (GCR) states that quality higher education and training is crucial for economies to move up the value chain and go beyond simple processes and products. The Global Competitiveness Index measures secondary and tertiary education enrolment rates as well as the quality of education as evaluated by the business leaders. The extent of on-job training is also taken into account as it is beneficial in upgrading the skill of employees.

According to the GCR 2016-17, India scores relatively low and ranks 102nd among 140 countries in gross enrolment for secondary education, and ranks 93rd in gross enrolment for tertiary education. India also scored relatively low in availability of specialized training.

Singapore, despite being a small sized economy, was ranked second overall in the global competitiveness index 2016-17, due to its superb performance in the productivity parameters such as education. There is a huge emphasis on education in Singapore which has led to the advancement in expertise and competence of the labour force and consequently growth of the economy. Singapore's increased investment in education, research and training has enabled the comprehensive development of the country. A similar case is with Switzerland, which had the leading position in the overall global competitiveness ranking 2016-17.It has maintained its superior position over the years and a major driving factor is the number of well quipped scientific research institutions in the country.

The availability of profitable job opportunities in other sectors has led to a paucity of number of professionals available for the food processing sector. For the smooth operation of the food processing industry, there is an urgent requirement of efficient technicians, manpower skilled in marketing as well as supply chain and logistics managers. This will ensure efficacy in operations across the entire value chain in the food processing industry. There is a need to introduce for more courses specializing in food processing which train the employees keeping into account the industry demand, with enhanced emphasis on research and development and qualifications on technology and innovations.

The value addition at various stages of the food processing industry requires particular skill sets, across different segments of the food processing industry. However, as can be observed from the Table 6.13, a majority of the employees engaged in the food processing industry have inadequate qualifications, leading to lack in skill set and dearth of innovations in the industry undertakings.

Table 6.13: Basic Functional Distribution of Human Resources across Segments in Food Processing Industry in India

Function	% of employees
Procurement	10%
Testing and Quality	20%
Production	55%
R&D	1-2%
Storage	2-3%
Other (Sales & other Support Function)	10%

Source: Journal of Rural Development, Vol. 32, No. 4, Oct - Dec.: 2013

Table 6.14: Distribution of Human Resources by Education Level in Food Processing Industry in India

Education Level	% of Employees
Management Education	1-2%
Food Technologists	20%
Post-Graduates	0.5-1%
Graduates	10%
Diploma Holders	2-5%
Certificate Holders	2-5%
10^{th} standard or below	80%

Source: Journal of Rural Development, Vol. 32, No. 4, Oct - Dec. 2013

Insufficient Innovation

India holds the 45th position in terms of gross expenditure on Research and Development globally. In Israel, which holds the first position in terms of gross expenditure on research and development as a percentage of GDP, science and technology is considered to be the core element for achieving national goals.

Given the significance of research and development in the food processing industry, there is a need for enhanced focus in the area. This would require capitalizing on the science and technology investments that are already in place. Modern technology is a necessary requirement for ensuring the safety of nutritional quality of food and the value addition in the processing of food products. The utilization of technology in sectors such as processing, warehousing, logistics and other segments of the supply chain in India remains low as compared to other economies of the world. When food chain is unorganised, the application of poor technology leads to a decline in the nutritive value of food, thus making it unsuitable for exports. This, therefore calls for increased investments in R&D and technology in the food processing industry.

Table 6.15: Ranking of Countries in terms of Gross Expenditure on R&D as a % of GDP

Rank	Country	GERD as % of GDP	% financed by business enterprises
1	Israel	3.47	36.54
2	Korea, Rep.	3.36	75.33
3	Japan	2.79	77.26
4	Finland	2.15	53.53
5	Sweden	2.12	60.96
6	Austria	2.11	47.16
7	Switzerland	2.05	60.78
8	Denmark	1.98	57.88
9	Germany	1.93	65.44
10	The USA	1.92	60.85
45	India	0.29	n/a

Source: Global Innovation Report 2016-17

7. Strategies

For successful development of the food processing industry, it is important to ensure consistency in supply and reduce wastage of agri products. Production and marketing strategies are crucial for export development of the food processing sector.

Augmenting Productivity through Greater Technology Intervention

Although India is among the leading producers of food, productivity and yield of major crops remains low when compared to other countries. High productivity of raw materials in this sector is a sine qua non of a thriving food processing sector. The yield of crops in India is negatively affected by the sluggish growth in technological advancement coupled with the slow rate of knowledge dissemination.

Technology today is a huge leveller – appropriate usage would give farmers the ability to automatically collect objective information about the status of soil, water, crops, and animals. The sophistication of today's sensors, internet-enabled devices, software applications, and cloud data storage facilities allow vast amounts and types of data to be captured, stored, managed, and fed into decision-support tools to guide business decisions.

Mobile phones are being used in countries like Ghana, Kenya, Nigeria and Thailand for the proliferation of information on the appropriate fertiliser variety, prices of crops and inputs and forecast weather conditions. These have proved very beneficial to increase productivity of crops and farmers income. Drones could also be put to use by the State Agricultural Universities to disseminate important information on pest control, apt methods of irrigation and integrated nutrient management.

Box 1 : Integrating Technology in Dairy Farming through Internet of Things

Dairy farming is a source of income for millions of rural milk producers contributing towards strengthening the livelihoods of small holder milk producers who form majority of India's milk production system. With more than 3,00,000 collection centres meant for milk procurement across different milk societies, it becomes important for the collection units to be modernized. The need of the hour is to incorporate Internet of Things (IoT) hand held computing device which are embedded with GPRS/GSM enabled system and provided connectivity through cloud based analytics solution. The IoT is a system of interrelated computing devices, mechanical and digital machines, objects, that are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction. The IoT is now finding application in the food processing industry.

A young end-to-end dairy technology solutions company – Stellapps Technologies (incubated by IIT Chennai's Rural Technology Business Incubator) based in Bengaluru has leveraged IoT to produce and procure comprehensive farm optimization and monitoring support, which helps dairy farmers and cooperatives maximize profits while minimizing effort. Stellapps is India's first Dairy Technology Solutions Company, building automation tools integrated with cloud, mobility, and data analytics for Dairy farms, Cooperatives, and private dairies. As an end-to-end solution initiative, the company provides dairy farm optimization and monitoring services with special focus on small and medium herd size farms (5 to 25 cows). Stellapps has developed an automatic milk production management system, 'SmartMoo', which consists of an automatic milk production management program, small production and storage equipment, including mechanical pumps, and a low temperature storage tank. The system enables small-scale cattle farmers to automatically manage milk production, storage, and data control, thus making it possible to increase their profits. The focus of the company is on clean milk production protocols, productivity improvement, cost optimization and real-time data access. In a short period of its journey, the company has managed to execute contracts from overseas as well. Exim Bank has provided financial support to this high-technology oriented company in its effort of scaling up beyond the domestic boundaries.

*Source: IoT Hand-held Computing Device over Personal Computer at Milk Procurement Centre White Paper.

While rural and regional access to fast, reliable IT infrastructure is considered a vital precursor to building a strong agro-tech sector, the Government would need to set up such information base which could then be disseminated in a timely manner, and in a lucid language to the farmers. This would not only help in augmenting productivity but will also reduce wastage and streamline the production process.

Strengthening Research Institutes

Given such disparity in productivities, significant reforms in agricultural research and extension services are crucial for the development of agro and agro processed industry in India. The most critical issues in this regard include irrigation and water management, the need for increase in quality seed usage, improved disease and pest management and the need to focus on technology which is suited particularly for small and marginal holdings.

These could be made possible by dedicated investment for the development of infrastructure for agricultural research and education. The research outcomes amongst the scientist may be enhanced by incorporating performance indicators. Incentives should be given to the private sector to participate in the innovation process, which could lead to research in high yielding variety of seeds. Agricultural research should be undertaken in collaboration with other stakeholders of the value chain. The researchers engaged in fertiliser manufacturing companies and the seed producing companies, should work in cooperation with the farmers to develop agricultural inputs which are resilient and adaptable to the changing weather conditions.

Moreover, India should import planting material for the production of new varieties of potential identified products including grapes, oranges and bananas to ensure the extension of the seasonality window of these products and ensure yearlong supply.

Human Resource Development

Another key bottleneck to the growth of this industry is limited awareness and technical knowledge. There is a need for imparting training on pre-harvest and post-harvest management practices in a crop-specific and location-specific manner to facilitate higher farm yields and better storage/transportation/quality of the produce. The institutions engaged in this field need to work more proactively with the Ministry of Food Processing Industries towards introducing food processing curriculum in the State educational system. Training should be focussed on modern techniques of farming and product marketing. Curriculum could also include a compulsory field work in spreading the learnings to village panchayats and farmers. More number of ITIs should be encouraged to introduce food processing courses.

Managing Non-tariff Measures

Non-Tariff Barriers (NTBs) refer to restrictions that result from prohibitions, conditions, or specific market requirements that make importation or exportation of products difficult and/or costly. Many agricultural produce, either raw or processed, face a number of such NTBs across the world. This is largely because of the lack of harmonization of standards of products, stringent quarantine procedures, mandatory labelling and packaging, different minimum residual limits prescribed by countries for pesticides, drugs and other contaminants, including dispute with regard to definitions (for example, in the case of whisky). In fact, according to ITC, the sectors with the highest numbers of technical regulations per imported product and the highest share of imports subject to such regulations are fresh and processed food[21]. Another common problem faced is disregard of an international accredited certification of a produce in some countries.

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. Countries should be encouraged to base their domestic technical regulations or standards on those developed by international organizations, including the Joint FAO/WHO Codex Alimentarius Commission (Codex) for food

[21]Meeting the Standard For Trade, ITC

safety; the Office International des Epizooties (OIE) for animal health; and the International Plant Protection Convention (IPPC) for plant health. This will not only reduce NTBs but will also allow smooth movement of goods, and more importantly reduce the inconvenience and costs involved in getting multiple certifications.

Adopting Good Agricultural Practices (GAP)

Sanitary and Phytosanitary Measures (SPS) are another major deterrent towards free movement of agricultural and agro processed products. SPS barriers comprise specific concerns that affect the health and safety of consumers, and include issues such as presence of excessive chemicals, pesticides, synthetic colour and microbes. SPS issues often lead to a situation where a particular item facing technical issues in one member country gets blocked in other countries also even if the glitch is a minor one. Indiscriminate use of pesticides has far-reaching consequences on exports as shipments get detained due to detection of pesticide residues. Indian food processing industry needs to enhance its quality and safety standards to match the global levels. However, compliance with such standards requires significant investment. Many developing countries, including India face difficulties in the form of research and development facilities as well as food quality lab network services to improve and upgrade product qualities as per requirements of Good Agriculture Practices[22] (GAP), Hazard Analysis and Critical Control Point (HACCP), etc. The investment requirements for HACCP plants are large as most of the capital goods related to the plant need to be imported from the developed countries. The installation cost of HACCP plants varies from Rs 10 million to Rs 25 million. Further, on an average, an export processing firm is estimated to spend about Rs 2 million per year to maintain a HACCP plant[23].

According to a Study[24], the compliance to food safety measures is a costly proposition and the small processing and exporting units in India are particularly affected because of high cost of compliance per kg during pre-export processing. This has also impacted the export competitiveness of products adversely. The Study estimated that for any exporter of horticulture products, the average additional pre-export processing with cost of compliance increases by about Rs 4.50 per kg for fresh fruit and vegetables and Rs 3 per kg for processed fruits and vegetable products, respectively. Although these estimates may be slightly dated, they do provide an indication of the amount that needs to be set aside for complying with such standards. The additional pre-export processing costs for compliance with standards of fresh fruits and vegetables and their processed products was more in Bangalore, about Rs 5 and Rs 3 per kg because of poor infrastructure and less number of export processing units as compared to Mumbai where it was about Rs 4 for fresh fruits and vegetables and Rs 2.50 per kg for processed fruits and vegetable products.

The cost compliance for SPS measures have resulted in greater gains to the exporters in India allowing them market access. Therefore, the government needs to encourage compliance to international standards and help the exporters with the needed facilities. The government needs to create means and mechanisms to upgrade the national system for testing, certification and laboratory accreditations in order to meet the global trade demands. At the same time exporters must learn to supply safe products and to defend their interests in transparent, equivalence standards.

Enhanced Emphasis on Packaging

In the food and beverage industry, packaging 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 prime consideration as it provides protection from undesirable physiological changes and quality

[22]Good Agricultural Practices are "practices that address environmental, economic and social sustainability for on-farm processes, and result in safe and quality food and non-food agricultural products". GAP pertains to soil, water, crop protection, animal production, animal health, energy and waste management, etc.
[23]Export of Horticultural Products from India: Economic Impact of Cost of Compliance for Food Safety Measures; Association of Asia Scholars.
[24]ibid

deterioration. Moreover, packaging is an influential marketing tool and increases the attractiveness of the product, facilitating purchase decision by consumers. The retailers can utilize the advantages being offered by innovative forms of packaging such as active packaging and smart tagging. In this regard, APEDA and other relevant agencies could make provisions of financial assistance, for small and medium sized exporters to undertake short term courses on food packaging provided by reputed institutes like Indian Institute of Packaging (IIP). While APEDA has been working with Indian Institute of Packaging, the collaboration could be further augmented to train exporters about packaging and labelling trends prevalent in international markets.

Cold Chain Infrastructure

The provision of required physical and marketing infrastructure is crucial for the enhancement of Indian exports of processed agro-products. It is essential that at the producer stage, the farmers should be aware of the importance of cold chain infrastructure and how that would link the farmers to the value chain. There should be an increase in the extension services imparting knowledge in this regard. Not only among farmers, but also among all value chain actors including consumers and policy makers, the importance of cold chain in maintaining food safety and quality, and preserving its economic value should be inculcated. Enhancing the bandwidth of cold chain facilities, improvement of storage conditions, cargo facilities at airports/ports, aquaculture infrastructure, become pre-requisites for the enhancement of Indian processed food exports. In this regard, the Ministry of Food Processing Industry under the Scheme for Cold Chain, Value Addition and Preservation Infrastructure provides financial assistance at the rate of 50% of the total cost of plant and machinery and technical civil work in general areas, and 75% for the North Eastern Region. Such programs should be widely advertised by APEDA for greater usage as a part of their knowledge dissemination exercise.

Focus on Food Safety

Adhering to food safety norms is a challenge in India. The supply chain of processed food in India is highly fragmented leading to inefficiency in operations. Besides, India has more often faced with the rejection of processed food products in the international market due to various reasons. This essentially could be mitigated through greater education and usage of technology to ensure prompt and extensive flow of information regarding the contamination of food, and compliance to the food standards.

Additionally, the food safety labs in India are not able to keep pace with the increasing changes and demands of the food processing industry. The equipment in the food testing laboratories are not upgraded and it is highly understaffed. This dearth of appropriately updated infrastructure is one of the leading causes for low level of efficiency. There are also shortage of qualified and trained staff which amplifies the existing hurdles. There should be an increase in investment for upgradation of the equipment in the food processing laboratories.

It is essential for all the participants of the food supply chain including the farmers, manufacturers as well as the retailers to put in coordinated efforts to enforce food safety. There is a need to setup a robust compliance system for the purpose of ensuring compliance with the regulatory regime in regions where the food product is being consumed. An effective track and trace system is indispensable in maintenance of food quality, which is possible only when there is transparent communication facilitation among members of the supply chain, who should also be aware of the hazards accompanying the quality failure in food.

Moreover, increasing the number of standards and aligning them with the international standards like Hazard Analysis and Critical Control Points (HACCP), would help the food processing industry flourish. The Government through its various agencies could consider conducting more training programs with the aim of a betterment in food standards, which will guarantee food safety.

Promoting Synergy among Different Export Promotion Organisations

There is a need for synergising the activities of various export promotion organisations such as Agricultural and Processed Food Products Export Development

Authority (APEDA), the Marine Products Export Development Authority (MPEDA), the Coffee Board, the Tea Board, the Spices Board, the Cashew Export Promotion Council, and the Export Inspection Council, in such a manner that the collaborative efforts can be undertaken with the objective of augmenting exports. A synchronised approach will help in India garnering greater share in agricultural and processed food exports.

Strategizing Geographical Location for Food Processing

The location of food processing industries can be selected taking into account the vicinity of logistics centre and port. In this regard, initiatives are already being taken – for instance, as a part of the Sagarmala Programme of the Ministry of Shipping, two mega food park projects are being implemented in Kakinada, Andhra Pradesh and Satara, Southern Maharashtra by the Ministry of Food Processing Industry. These projects are tactically placed in the Coastal Economic Zone in close proximity to the port with the aim of augmenting export of processed food from India. APEDA, being a nodal agency can play a significant role in providing suitable inputs to the industry disseminating the advantages of these locations.

Moreover, there should be provision of green channel at airports and seaports for horticultural items. India should engage in negotiating for stationing local quarantine inspectors appointed by the importing country or third party inspectors of nearby countries or those living in India as it would enable reduction of costs. The introduction of international flights to and from Amritsar and Chandigarh would allow the smooth flow of horticultural produce in Punjab to the Gulf countries[25].

Conjunctive Management of Water

Irrigation systems have been under pressure to produce more with lower supplies of water. Innovative irrigation practices can enhance water efficiency, gaining an economic advantage while also reducing environmental burdens. In some cases the necessary knowledge has been provided by extension services, helping farmers to adapt and implement viable solutions, thus gaining more benefits from irrigation technology. In India, sustainable development and efficient management of water is increasingly becoming a major challenge. Increasing population, growing urbanization, and rapid industrialization combined with the need for raising agricultural production generates competing claims for water.

Conjunctive management could be a very successful tool in water management for irrigation. It refers to the integrated and joint management of rainwater, surface water, wastewater, and groundwater resources for optimal socio-economic and environmental outcomes at the level of aquifer and irrigation system or a river basin. Conjunctive use refers to integrated use of surface and groundwater at the farm level. Conjunctive management works through structures and processes that guide individual water users to undertake conjunctive use.

Conjunctive management is at work, for example, when canal irrigation system managers purposely direct surface water deliveries away from water-logged areas to groundwater depleted areas; or when they suspend canal supplies during the rainy period to provide irrigation during dry season; or when they use treated urban wastewater to supplement fresh canal or groundwater supplies. In Gujarat, the Government has constructed a 600 km long spreading canal to use surplus flood waters from Kadana and Sardar Sarovar reservoirs in the south to recharge parched aquifers of North Gujarat to counter groundwater depletion and reduce power subsidies to irrigation. This is a good example of conjunctive management of surface and groundwater. Conjunctive management is an important opportunity for increasing irrigation efficiency in India and prevent groundwater depletion, avoid farm-power subsidies, alleviate drought and dry spells, and reduce water quality deterioration.

[25]Reviving Accelerating India Export Issues

Need for Improved Extension Services

Extension services to the farmers is slowly becoming prevalent in developing countries like India, but there remains severe dearth in dissemination. Extension consists of any person or organization in the private sector, which delivers advisory services in agriculture and is seen as an alternative to public extension. With the decreasing farm size, concentration and specialization of production, location-specific and timely information now have become much more valuable for farmers in India. Information is now an integral part of each farmer's organized planning to reap highest productivity with competitive advantage.

As the value and volume of information increases, there are greater incentives for the private sector to cover more value by improving the quality of information and its applications, including location-specific, time and formats, and helping farmers apply this information to their operations. There is also need of more specialized services like marketing intelligence, price forecasting, soil testing, customized fertilizer, foliar nutrition services, mobile based extension, etc. Guided by private extension, farmers can become more export oriented and focused. Advanced extension services will also help in price discovery for undertaking food processing and thereby determine what could be the best produce to be engaged in.

Improved Storage can Prevent Wastage of Agri-Products

While it is laudable that India has achieved self-sufficiency in food grains production, it is equally distressing that every year an enormous amount of food stocks get wasted due to archaic procurement, storage and warehousing methods. Given the possible escalation in food prices due to demand-supply mismatch, it is important that apart from raising agricultural productivity, management of supply chain is also improved to prevent any sharp escalation in prices. Sound storage facilities will help in adequate availability of raw produce which could be used for food processing.

There is a need to adopt best warehousing practices for a robust supply chain management for agriculture products. According to NITI Aayog, the estimated gap between agri-warehousing supply and demand is 35 million tonnes. At the same time, there is substantial inter-regional imbalance as North India has access to 60% of the total storage. Existing marketing channels are dominated by multiple intermediaries, thereby adding to the woes of the producers of perishable agri goods. There is also an urgent need to spruce up both road and rail connectivity. This will ensure that farm produce can be transported across the length and breadth of the country in a more secure environment and in quick time, thereby ensuring minimal impact on the quality of the produce. There is also a need for a sustained campaign to improve existing storage spaces and introduce technology to make the entire supply chain smooth, transparent and mobile to ensure quality, timely delivery, right price and minimal losses.

Clear-cut Agri Trade Policy

Emphasis should be laid towards formulating a focussed agri export policy, as even in the case of free trade agreements and regional trade agreements, agricultural trade is largely overlooked. While a focussed agri-export policy is needed, even a stable agri-export policy has not been formulated . Measures should be taken in this regard, to ensure hassle free provision of credit, adherence to sanitary and photo sanitary conditions of export markets and the availability of appropriate infrastructure and marketing facilities. The mind-set of the farmers should be changed from subsistence and domestic oriented farming to export oriented farming.

Annexure I:

Categorization of HS Codes

HS Code	HS Description	Category
071120	Olives, provisionally preserved but not suitable for immediate consumption	Processed Fruits and Vegetables
071140	Cucumbers gherkins provisionally preserved, but not for immediate consumption	Processed Fruits and Vegetables
071151	Preserved mushrooms - genus Agaricus	Processed Fruits and Vegetables
071159	Preserved mushrooms nes, truffles	Processed Fruits and Vegetables
071190	Vegetables nes &mixtures provisionally preserved, but not for immediate consumption	Processed Fruits and Vegetables
071220	Onions dried but not further prepared	Processed Fruits and Vegetables
071231	Dried mushrooms - genus Agaricus	Processed Fruits and Vegetables
071232	Dried wood ear mushrooms	Processed Fruits and Vegetables
071233	Dried jelly fungi	Processed Fruits and Vegetables
071239	Dried mushrooms nes, truffles	Processed Fruits and Vegetables
071290	Vegetables and mixtures dried, but not further prepared nes	Processed Fruits and Vegetables
080450	Guavas, mangoes and mangosteens, fresh or dried	Processed Fruits and Vegetables
081110	Strawberries, uncooked or steamed or boiled in water, sweetened or not, frozen	Processed Fruits and Vegetables
081120	Raspberries, mulberries, etc. uncooked, steamed/boiled in water sweetened/not, frozen	Processed Fruits and Vegetables
081190	Fruits &edible nuts uncooked ,steamed/boiled (water) sweetened/not, frozen, nes	Processed Fruits and Vegetables
081210	Cherries provisionally preserved but unsuitable for immediate consumption	Processed Fruits and Vegetables
081290	Fruits &nuts provisionally preserved but unfit for immediate consumption nes	Processed Fruits and Vegetables
081310	Apricots, dried	Processed Fruits and Vegetables
081320	Prunes, dried	Processed Fruits and Vegetables
081330	Apples, dried	Processed Fruits and Vegetables
081340	Fruits, dried nes	Processed Fruits and Vegetables
081350	Mixtures of edible nuts or dried fruits of this chapter	Processed Fruits and Vegetables
081400	Peel of citrus fruit/melons (watermelons) fresh ,frozen, dried/ provisionally preserved	Processed Fruits and Vegetables
200110	Cucumbers and gherkins, prepared or preserved by vinegar or acetic acid	Processed Fruits and Vegetables
200190	Veg ,fruit ,nut& edible parts of plants nes ,prep/preserved by vin/acetic acid	Processed Fruits and Vegetables
200210	Tomatoes, whole/in pieces prepared/preserved by vinegar/acetic acid	Processed Fruits and Vegetables
200290	Tomatoes nes, prepared or preserved other than by vinegar or acetic acid	Processed Fruits and Vegetables
200310	Mushrooms prepared or preserved other than by vinegar or acetic acid	Processed Fruits and Vegetables
200390	Mushrooms nes preserved, not pickled	Processed Fruits and Vegetables
200410	Potatoes prepared or preserved other than by vinegar or acetic acid, frozen	Processed Fruits and Vegetables
200490	Veg nes &mx of veg prep or preserved ,o/t by vinegar or acetic acid, frozen	Processed Fruits and Vegetables
200510	Homogenised vegetables prep/preserved ,o/t by vinegar/acetic acid, not frozen	Processed Fruits and Vegetables
200520	Potatoes prepared or preserved/t by vinegar or acetic acid, not frozen	Processed Fruits and Vegetables
200540	Peas prepared or preserved, other than by vinegar or acetic acid, not frozen	Processed Fruits and Vegetables
200551	Beans, shell prepared/preserved by vinegar/acetic acid, not frozen	Processed Fruits and Vegetables
200559	Beans nes prepared or preserved by vinegar or acetic acid, not frozen	Processed Fruits and Vegetables
200560	Asparagus prepared or preserved by vinegar or acetic acid, not frozen	Processed Fruits and Vegetables
200570	Olives prepared or preserved by vinegar or acetic acid, not frozen	Processed Fruits and Vegetables
200580	Sweet Corn prepared or preserved by vinegar or acetic acid, not frozen	Processed Fruits and Vegetables
200590	Vegetable nes and mix of Vegetable prepared or preserved by vinegar or acetic acid, not frozen	Processed Fruits and Vegetables
200600	Fruit, nut, fruit-peel & parts of plant preserved by sugar (draind,glace/cryst)	Processed Fruits and Vegetables
200710	Homogenised prep (jams, fruit jellies etc.) cooked prep whether/not sugared/sweetened	Processed Fruits and Vegetables

200791	Citrus fruit (marmalades,puree,etc) cooked prep whether/not sugared/sweetened	Processed Fruits and Vegetables
200799	Jams, fruit jellies, fruit/nut puree & paste, cooked whether/not sugared/sweetened	Processed Fruits and Vegetables
200811	Ground-nuts nes o/w prep or preserved, sugared, sweetened, spirited or not	Processed Fruits and Vegetables
200819	Nuts &seeds nes including mix ,o/w prep or preserved, sugared, sweetened, spirited or not	Processed Fruits and Vegetables
200820	Pineapples nes/w prep or preserved, sugared, sweetened, spirited or not	Processed Fruits and Vegetables
200830	Citrus fruits nes/w prep or preserved, sugared, sweetened, spirited or not	Processed Fruits and Vegetables
200840	Pears nes ,o/w prep or preserved whether or not sugared, sweetened, spirited	Processed Fruits and Vegetables
200850	Apricots nes/w prep or preserved whether or not sugared, sweetened or spirited	Processed Fruits and Vegetables
200860	Cherries nes, o/w prep or preserved whether or not sugared, sweetened or spirited	Processed Fruits and Vegetables
200870	Peaches nes, o/w prep or preserved whether or not sugared, sweetened or spirited	Processed Fruits and Vegetables
200880	Strawberries nes, o/w prep or preserved whether or not sugared, sweetened, spirited	Processed Fruits and Vegetables
200891	Palm Hearts nes ,o/w prep or preserved whether or not sugared, sweetened, spirited	Processed Fruits and Vegetables
200899	Fruits &other edible parts of plants nes, prep/preserved, whether or not sugared, sweetened, spirited	Processed Fruits and Vegetables
200911	Orange juice, unfermented &not spirited, whether/not sugared/ sweet, frozen	Processed Fruits and Vegetables
200912	Orange juice, unfermented, Brix value < 20	Processed Fruits and Vegetables
200919	Orange juice nes, unfermented &not spirited, whether or not sugared or sweet	Processed Fruits and Vegetables
200921	Grapefruit juice, unfermented, Brix value < 20	Processed Fruits and Vegetables
200929	Grapefruit juice, unfermented, Brix value >= 20	Processed Fruits and Vegetables
200931	Citrus nes juice, unfermented, Brix value < 20	Processed Fruits and Vegetables
200939	Citrus nes juice, unfermented, Brix value >= 20	Processed Fruits and Vegetables
200941	Pineapple juice, unfermented, Brix value < 20	Processed Fruits and Vegetables
200949	Pineapple juice, unfermented, Brix value >= 20	Processed Fruits and Vegetables
200950	Tomato juice unfermented &not spirited, whether or not sugared or sweet	Processed Fruits and Vegetables
200961	Grape juice, unfermented, Brix value < 20	Processed Fruits and Vegetables
200969	Grape juice, unfermented, Brix value >= 20	Processed Fruits and Vegetables
200971	Apple juice, unfermented, Brix value < 20	Processed Fruits and Vegetables
200979	Apple juice, unfermented, Brix value >= 20	Processed Fruits and Vegetables
200990	Mixtures of juices unfermented &not spirited whether or not sugared or sweet	Processed Fruits and Vegetables
030211	Trout, fresh or chilled excluding heading No 03.04, livers and roes	Processed Fishery Products
030212	Salmon Pacific, Atlantic& Danube, fresh or chilled excluding heading No 03.04,livers&roes	Processed Fishery Products
030219	Salmonidae nes, fresh or chilled, excluding heading No 03.04,livers and roes	Processed Fishery Products
030221	Halibut, fresh or chilled, excluding heading No 03.04, livers and roes	Processed Fishery Products
030222	Plaice, fresh or chilled, excluding heading No 03.04, livers and roes	Processed Fishery Products
030223	Sole, fresh or chilled, excluding heading No 03.04, livers and roes	Processed Fishery Products
030229	Flatfish nes, fresh or chilled excluding heading No 03.04,livers & roes	Processed Fishery Products
030231	Tunas, albacore or long finned, fresh or chilled excluding heading No 03.04,livers&roes	Processed Fishery Products
030232	Tunas, yellow fin, fresh or chilled, excl heading No 03.04,livers and roes	Processed Fishery Products
030233	Skipjack or stripe-bellid bonito, fresh or chilled, excluding heading No 03.04,livers&roes	Processed Fishery Products
030234	Fresh/chilled bigeye tunas	Processed Fishery Products
030235	Fresh/chilled bluefin tunas	Processed Fishery Products
030236	Fresh/chilled Southern bluefin tunas	Processed Fishery Products
030239	Tunas nes, fresh or chilled, excluding heading No 03.04,livers and roes	Processed Fishery Products
030240	Herrings, fresh or chilled, excluding heading No 03.04,livers and roes	Processed Fishery Products
030250	Cod, fresh or chilled, excluding heading No 03.04, livers and roes	Processed Fishery Products
030261	Sardines ,sardinella,brislg/sprats, fresh /chilled, excluding heading No 03.04,livers&roes	Processed Fishery Products
030262	Haddock, fresh or chilled, excluding heading No 03.04, livers and roes	Processed Fishery Products

030263	Coalfish, fresh or chilled, excluding heading No 03.04,livers and roes	Processed Fishery Products
030264	Mackerel, fresh or chilled, excluding heading No 03.04,livers and roes	Processed Fishery Products
030265	Dogfish & other sharks, fresh or chilled, excl headg No 03.04,livers & roes	Processed Fishery Products
030266	Eels, fresh or chilled, excluding heading No 03.04, livers and roes	Processed Fishery Products
030269	Fish nes, fresh or chilled excl heading No 03.04, livers and roes	Processed Fishery Products
030270	Livers and roes, fresh or chilled	Processed Fishery Products
030311	Frozen sockeye salmon red salmon	Processed Fishery Products
030319	Frozen Pacific salmon	Processed Fishery Products
030321	Trout, frozen, excluding heading No 03.04, livers and roes	Processed Fishery Products
030322	Salmon Atlantic, frozen ,excluding heading No 03.04, livers and roes	Processed Fishery Products
030329	Salmonidae, nes, frozen, excluding heading No 03.04, livers and roes	Processed Fishery Products
030331	Halibut, frozen, excluding heading No 03.04, livers and roes	Processed Fishery Products
030332	Plaice, frozen, excluding heading No 03.04, livers and roes	Processed Fishery Products
030333	Sole, frozen, excluding heading No 03.04, livers and roes	Processed Fishery Products
030339	Flatfish nes, frozen, excluding heading No 03.04, livers and roes	Processed Fishery Products
030341	Tunas, albacore or long finned, frozen, excl headg No 03.04,livers & roes	Processed Fishery Products
030342	Tunas, yellowfin, frozen excluding heading No 03.04, livers and roes	Processed Fishery Products
030343	Skipjack or stripe-bellid bonito ,frozen ex headg No 03.04,livers&roes	Processed Fishery Products
030344	Frozen bigeye tunas	Processed Fishery Products
030345	Frozen bluefin tunas	Processed Fishery Products
030346	Frozen Southern bluefin tunas	Processed Fishery Products
030349	Tunas nes, frozen, excluding heading No 03.04, livers and roes	Processed Fishery Products
030350	Herrings, frozen, excluding heading No 03.04, livers and roes	Processed Fishery Products
030360	Cod, frozen, excluding heading No 03.04, livers and roes	Processed Fishery Products
030371	Sardines, sardinella,brislg or sprats ,frozen excluding heading No 03.04,livers&roes	Processed Fishery Products
030372	Haddock, frozen, excluding heading No 03.04, livers and roes	Processed Fishery Products
030373	Coalfish, frozen, excluding heading No 03.04, livers and roes	Processed Fishery Products
030374	Mackerel, frozen, excluding heading No 03.04, livers and roes	Processed Fishery Products
030375	Dogfish and other sharks, frozen, excluding heading No 03.04,livers and roes	Processed Fishery Products
030376	Eels, frozen, excluding heading No 03.04, livers and roes	Processed Fishery Products
030377	Sea bass, frozen, excluding heading No 03.04, livers and roes	Processed Fishery Products
030378	Hake, frozen, excluding heading No 03.04, livers and roes	Processed Fishery Products
030379	Fish nes, frozen, excluding heading No 03.04, livers and roes	Processed Fishery Products
030380	Livers and roes, frozen	Processed Fishery Products
030410	Fish fillets and other fish meat, minced or not, fresh or chilled	Processed Fishery Products
030420	Fish fillets frozen	Processed Fishery Products
030490	Fish meat nes, minced or not, frozen	Processed Fishery Products
030510	Fish meal fit for human consumption	Processed Fishery Products
030520	Livers and roes, dried, smoked, salted or in brine	Processed Fishery Products
030530	Fish fillets, dried, salted or in brine but not smoked	Processed Fishery Products
030541	Salmon, Pacific, Atlantic and Danube, smoked including fillets	Processed Fishery Products
030542	Herrings smoked, including fillets	Processed Fishery Products
030549	Fish nes, smoked including fillets	Processed Fishery Products
030551	Cod dried, whether or not salted but not smoked	Processed Fishery Products
030559	Fish nes, dried, whether or not salted but not smoked	Processed Fishery Products
030561	Herrings, salted and in brine, but not dried or smoked	Processed Fishery Products

030562	Cod, salted and in brine, but not dried or smoked	Processed Fishery Products
030563	Anchovies, salted and in brine, but not dried or smoked	Processed Fishery Products
030569	Fish nes, salted and in brine, but not dried or smoked	Processed Fishery Products
030611	Rock lobster & other sea crawfish, frozen in shell/not, including boiled in shell	Processed Fishery Products
030612	Lobsters nes, frozen, in shell or not, including boiled in shell	Processed Fishery Products
030613	Shrimps and prawns, frozen, in shell or not, including boiled in shell	Processed Fishery Products
030614	Crabs frozen, in shell or not, including boiled in shell	Processed Fishery Products
030619	Crustaceans nes, frozen, in shell or not including boiled in shell	Processed Fishery Products
030621	Rock lobster & other sea crawfish not frozen ,in shell/not, incl boiled in shell	Processed Fishery Products
030622	Lobsters nes, not frozen, in shell or not, including boiled in shell	Processed Fishery Products
030623	Shrimps & prawns, not frozen, in shell or not, including boiled in shell	Processed Fishery Products
030624	Crabs, not frozen, in shell or not, including boiled in shell	Processed Fishery Products
030629	Crustaceans nes, not frozen, in shell or not, including boiled in shell	Processed Fishery Products
030710	Oysters, shelled or not, live, fresh, chilled, frozen, dried ,salted or in brine	Processed Fishery Products
030721	Scallops, including queen scallops, shelled or not, live, fresh or chilled	Processed Fishery Products
030729	Scallops ,including queen scallops, shelled or not, frozen, dried, salted or in brine	Processed Fishery Products
030731	Mussels, shelled or not, live, fresh or chilled	Processed Fishery Products
030739	Mussels, shelled or not, frozen, dried, salted or in brine	Processed Fishery Products
030741	Cuttle fish and squid, shelled or not, live, fresh or chilled	Processed Fishery Products
030749	Cuttle fish and squid, shelled or not, frozen, dried, salted or in brine	Processed Fishery Products
030751	Octopus, live, fresh or chilled	Processed Fishery Products
030759	Octopus, frozen, dried, salted or in brine	Processed Fishery Products
030760	Snails, shelled or not, live, fresh, chilled, frozen, dried, salted or in brine	Processed Fishery Products
030791	Molluscs nes, shelled/not, and aquatic invertebrates nes, live, fresh/chilled	Processed Fishery Products
030799	Molluscs nes, shelled or not &aquatic invert nes, frozen , dried, salted or in brine	Processed Fishery Products
160300	Extracts &juices of meat , fish, or crust, molluscs/other aquatic invertebrates	Processed Fishery Products
160411	Salmon prepared or preserved, whole or in pieces, but not minced	Processed Fishery Products
160412	Herrings, prepared or preserved, whole or in pieces but not minced	Processed Fishery Products
160413	Sardines, sardinella &brislg or sprats prep or preserved, whole or excluding minced	Processed Fishery Products
160414	Tunas, skipjack &Atl bonito,prepard/preserved, whole/in pieces, excluding minced	Processed Fishery Products
160415	Mackerel, prepared or preserved, whole or in pieces, but not minced	Processed Fishery Products
160416	Anchovies, prepared or preserved, whole or in pieces, but not minced	Processed Fishery Products
160419	Fish nes, prepared or preserved, whole or in pieces, but not minced	Processed Fishery Products
160420	Fish prepared or preserved, except whole or in pieces	Processed Fishery Products
160430	Caviar and caviar substitutes prepared from fish eggs	Processed Fishery Products
160510	Crab, prepared or preserved	Processed Fishery Products
160520	Shrimps and prawns, prepared or preserved	Processed Fishery Products
160530	Lobster, prepared or preserved	Processed Fishery Products
160540	Crustaceans nes, prepared or preserved	Processed Fishery Products
020110	Bovine carcasses and half carcasses, fresh or chilled	Processed Meat Products
020120	Bovine cuts bone in, fresh or chilled	Processed Meat Products
020130	Bovine cuts boneless, fresh or chilled	Processed Meat Products
020210	Bovine carcasses and half carcasses, frozen	Processed Meat Products
020220	Bovine cuts bone in, frozen	Processed Meat Products
020230	Bovine cuts boneless, frozen	Processed Meat Products
020311	Swine carcasses and half carcasses, fresh or chilled	Processed Meat Products
020312	Hams, shoulders and cuts thereof, of swine bone in, fresh or chilled	Processed Meat Products

020319	Swine cuts, fresh or chilled, nes	Processed Meat Products
020321	Swine carcasses and half carcasses, frozen	Processed Meat Products
020322	Hams, shoulders and cuts thereof, of swine, bone in, frozen	Processed Meat Products
020329	Swine cuts, frozen nes	Processed Meat Products
020410	Lamb carcasses and half carcasses, fresh or chilled	Processed Meat Products
020421	Sheep carcasses and half carcasses, fresh or chilled	Processed Meat Products
020422	Sheep cuts, bone in, fresh or chilled	Processed Meat Products
020423	Sheep cuts, boneless, fresh or chilled	Processed Meat Products
020430	Lamb carcasses and half carcasses, frozen	Processed Meat Products
020441	Sheep carcasses and half carcasses, frozen	Processed Meat Products
020442	Sheep cuts, bone in, frozen	Processed Meat Products
020443	Sheep cuts, boneless, frozen	Processed Meat Products
020450	Goat meat, fresh, chilled or frozen	Processed Meat Products
020500	Horse, ass, mule or hinny meat, fresh, chilled or frozen	Processed Meat Products
020610	Bovine edible offal, fresh or chilled	Processed Meat Products
020621	Bovine tongues, edible offal, frozen	Processed Meat Products
020622	Bovine livers, edible offal, frozen	Processed Meat Products
020629	Bovine edible offal, frozen nes	Processed Meat Products
020630	Swine edible offal, fresh or chilled	Processed Meat Products
020641	Swine livers, edible offal, frozen	Processed Meat Products
020649	Swine edible offal, frozen nes	Processed Meat Products
020680	Sheep, goats, asses, mules or hinnies edible offal, fresh or chilled	Processed Meat Products
020690	Sheep, goats, asses, mules or hinnies edible offal, frozen	Processed Meat Products
020810	Rabbit or hare meat and edible meat offal, fresh, chilled or frozen	Processed Meat Products
020830	Meat of primates (fresh/chilled/frozen)	Processed Meat Products
020890	Meat and edible meat offal, nes fresh, chilled or frozen	Processed Meat Products
020900	Pig fat lean meat free& poultry fat unrenderd, fresh, chilled, frozen or curd	Processed Meat Products
021011	Hams, shoulders and cuts thereof, of swine bone in, cured	Processed Meat Products
021012	Bellies, streaky and cuts thereof, swine cured	Processed Meat Products
021019	Swine meat cured, nes	Processed Meat Products
021020	Bovine meat cured	Processed Meat Products
021091	Meat salted/dried/smoked of primates	Processed Meat Products
050400	Guts, bladders and stomachs of animals except fish whole or in pieces	Processed Meat Products
160100	Sausage& sim product of meat, meat offal/blood& food prep based on these product	Processed Meat Products
160210	Homogenized preparations of meat and meat offal	Processed Meat Products
160220	Livers of any animal prepared or preserved	Processed Meat Products
160231	Turkey meat and meat offal prepared or preserved, excluding livers	Processed Meat Products
160232	Fowl (gallus domesticus) meat, prepared/preserved	Processed Meat Products
160239	Dom fowl, duck, goose& guinea fowl meat& meat offal prep/preserved excluding livers	Processed Meat Products
160241	Hams and cuts thereof of swine prepared or preserved	Processed Meat Products
160242	Shoulders and cut thereof of swine prepared or preserved	Processed Meat Products
160249	Swine meat& meat offal nes/excluding livers/ incl mixtures, prepared or preserved	Processed Meat Products
160250	Bovine meat and meat offal nes, excluding livers, prepared or preserved	Processed Meat Products
160290	Meat, meat offal or blood, prepared or preserved, nes	Processed Meat Products

040110	Milk not concentrated and unsweetened not exceeding 1% fat	Processed Dairy Products
040120	Milk not concentrated & unsweetened exceeding 1% not exceeding 6% fat	Processed Dairy Products
040210	Milk powder not exceeding 1.5% fat	Processed Dairy Products
040221	Milk and cream powder unsweetened exceeding 1.5% fat	Processed Dairy Products
040229	Milk and cream powder sweetened exceeding 1.5% fat	Processed Dairy Products
040291	Milk and cream unsweetened, nes	Processed Dairy Products
040299	Milk and cream nes sweetened	Processed Dairy Products
040310	Yogurt concentrated or not, sweetened or not, flavoured or containing fruit or cocoa	Processed Dairy Products
040390	Buttermilk, curdled milk & cream, & fermented or acid milk & cream nes	Processed Dairy Products
040410	Whey whether or not concentrated or sweetened	Processed Dairy Products
040490	Products consisting of natural milk constituents sweetened or not nes	Processed Dairy Products
040510	Butter	Processed Dairy Products
040520	Dairy spreads	Processed Dairy Products
040590	Fats and oils derived from milk nes	Processed Dairy Products
040610	Cheese, fresh (including whey cheese) unfermented, and curd	Processed Dairy Products
040620	Cheese, grated or powdered, of all kinds	Processed Dairy Products
040630	Cheese processed, not grated or powdered	Processed Dairy Products
040640	Cheese, blue-veined	Processed Dairy Products
040690	Cheese nes	Processed Dairy Products
020711	Fowls (gallus domesticus), whole, fresh or chilled	Processed Poultry and Egg Products
020712	Fowls (gallus domesticus), whole, frozen	Processed Poultry and Egg Products
020713	Fowls (gallus domesticus), cuts & offal, fresh/chilled	Processed Poultry and Egg Products
020714	Fowls (gallus domesticus), cuts & offal, frozen	Processed Poultry and Egg Products
020724	Turkey, whole. fresh or chilled	Processed Poultry and Egg Products
020725	Turkey, whole, frozen	Processed Poultry and Egg Products
020726	Turkey, cuts & offal, fresh or chilled	Processed Poultry and Egg Products
020727	Turkey, cuts & offal, frozen	Processed Poultry and Egg Products
040700	Eggs, bird, in shell, fresh, preserved or cooked	Processed Poultry and Egg Products
040811	Egg yolks dried	Processed Poultry and Egg Products
040819	Egg yolks nes	Processed Poultry and Egg Products
040891	Eggs, bird, not in shell, dried	Processed Poultry and Egg Products
040899	Eggs, bird, not in shell nes	Processed Poultry and Egg Products

Source: APEDA and MPEDA; Exim Bank Research

Annexure II:

India's Share in Global Exports of Processed Fruits and Vegetables Sector

HS Code	HS Description	Importing Country	Value of Imports (US$ Mn)	Share of India in the market	Top Exporters to the Market (% Share)
200410	Potatoes prepared/ preserved, frozen	USA	765	0.00%	Canada (98.8%), Netherlands (0.5%), Belgium (0.3%), France (0.3%), Germany (0.1%)
		France	597	0.00%	Belgium (55.9%), Netherlands (34.2%), Germany (4%), France (0.3%), United Kingdom 1.7%)
		United Kingdom	574	0.00%	Netherlands (65.7%), Belgium (28.6%), Germany (2.1%), France (1.6%), Ireland (1.2%)
		Japan	391	0.00%	USA (78.8%), Canada (9.5%), Belgium (5.1%), Netherlands (2.3%), China (1.3%)
		Brazil	355	0.00%	Argentina (59.4%), Netherlands (18.6%), Belgium (15.8%), Germany (2.5%), France (2.3%)
		World	6053	0.10%	Netherlands (26.4%), Belgium (21%), USA (17.8%), Canada (15.1%), France (4.8%)
200819	Nuts and Other seeds	Germany	591	3.40%	Turkey (63.8%), Luxembourg (6.8%), Netherlands (5.6%), India (3.4%), Italy (3.2%)
		USA	338	3.30%	Thailand (20.7%), Canada (13.9%), Israel (11.5%), Mexico (9.5%), Vietnam (7.7%)
		Canada	299	1.00%	USA (79.3%), Vietnam (6.7%), Thailand (4.7%), Lebanon (2.7%), China (1.7%)
		France	219	0.50%	Turkey (24.2%), Germany (19.2%), Spain (11.9%), USA (10.5%), Luxembourg (6.8%)
		Japan	166	0.00%	China (63.9%), USA (13.9%), Thailand (4.8%), France (3%), Australia (3%)
		World	3633	1.40%	Turkey (27.7%), USA (16.1%), Germany (8.8%), China (6.2%), Italy (3.5%)
200899	Fruits Nuts & Other Edible Parts of Plants	USA	981	1.10%	Mexico (21.1%), China (17.6%), Canada (10.3%), Thailand (9.2%), Korea (7.6%)
		Japan	278	5.40%	China (47.1%), Thailand (12.9%), USA (11.2%), Philippines (9.4%), India (5.4%)
		Netherlands	252	10.70%	USA (27.8%), India (10.7%), Germany (8.3%), Belgium (5.2%), Poland (5.2%)
		Germany	201	3.50%	Italy (12.4%), Austria (9.5%), USA (9.5%), Netherlands (9%), China (6%)
		Canada	185	2.70%	USA (54.6%), Mexico (7.6%), China (7%), Korea (6.5%), Philippines (5.9%)
		World	3321	3.90%	China (14.8%), USA (12.4%), Thailand (8.8%), Mexico (7.5%), Germany (4.7%)
200590	Vegetables & its Mixtures Prepared/ Preserved; Not Frozen nes	Japan	501	0.20%	China (81.4%), Korea (11.2%), Thailand (3.2%), USA (0.8%), Vietnam (0.6%)
		USA	479	5.00%	Peru (28.4%), China (14.6%), Mexico (9.2%), Canada (7.3%), Spain (5.2%)
		Germany	295	0.70%	France (20%), Netherlands (18%), Greece (11.5%), Australia (10.2%), Turkey (7.5%)
		France	209	0.00%	Spain (30.6%), Netherlands (12.9%), Belgium (12.9%), Italy (7.7%), Peru (6.7%)
		Korea	131	0.00%	China (99.2%), Thailand (0.8%)
		World	2747	2.00%	China (26.2%), Peru (8.4%), France (7.2%), Spain (6%), Netherlands (5.4%)

200290	Tomatoes Prepared/ Preserved	Germany	283	0.00%	Italy (55.5%), Spain (20.5%), China (7.4%), Portugal (4.2%), Turkey (2.5%)
		Japan	175	0.00%	Portugal (22.3%), China (19.4%), USA (17.1%), Spain (10.9%), Italy (10.3%)
		United Kingdom	171	0.00%	Italy (35.1%), Portugal (29.2%), Spain (14%), Germany (6.4%), Greece (5.3%)
		Russia	166	0.00%	China (52.4%), Portugal (9%), Italy (9%), Ukraine (6.6%), Spain (6%)
		Italy	154	0.00%	USA (49.4%), Spain (26.6%), China (10.4%), Portugal (5.2%), Greece (3.2%)
		World	2649	0.10%	China (22.5%), Italy (21.9%), USA (17.4%), Spain (10.5%), Portugal (8.5%)
200919	Orange juice, unfermented, whether or not containing added sugar or other sweetening matter	Belgium	657	0.00%	Brazil (89.6%), Netherlands (4%), Germany (2.1%), USA (2.1%), France (1.8%)
		Netherlands	532	0.00%	Brazil (83.6%), Belgium (5.3%), South Africa (2.6%), Germany (2.3%), Belize (1.3%)
		United Kingdom	332	0.00%	Belgium (67.8%), Netherlands (17.5%), Brazil (6.9%), Spain (4.5%), France (1.2%)
		Germany	259	0.00%	Brazil (79.9%), Netherlands (7.3%), Italy (3.9%), Switzerland Liechestan (3.5%), Mexico (2.7%)
		France	132	0.00%	Brazil (39.4%), Netherlands (19.7%), Belgium (12.1%), Spain (10.6%), Austria (9.1%)
		World	2591	0.10%	Brazil (61%), Belgium (12.6%), Netherlands (9%), Mexico (2.1%), USA (2%)
81190	Fruits and Nuts, Uncooked or cooked by steaming or boiling nes	USA	463	0.10%	Canada (19.8%), Chile (6.5%), Mexico (3%), Costa Rica (2.5%), Peru (1.8%)
		Germany	285	1.10%	Poland (19.3%), Serbia (10.5%), Canada (10.2%), Netherlands (5.6%), Greece (5.3%)
		France	174	0.60%	Portugal (13.8%), Belgium (10.9%), Italy (9.8%), Poland (8%), Canada (6.3%)
		Japan	166	0.00%	Canada (25.3%), China (15.1%), USA (12%), Thailand (7.8%), Italy (7.2%)
		Canada	129	0.00%	USA (58.1%), Chile (10.9%), Mexico (8.5%), Turkey (3.1%), Costa Rica (3.1%)
		World	2338	0.90%	Canada (12.9%), Poland (7.7%), USA (7.1%), Chile (6.9%), China (5.5%)
80450	Guavas, Mangoes/ mangosteens fresh/ dried	USA	491	0.80%	Mexico (50.5%), Peru (13%), Ecuador (9.2%), Brazil (9%), Guatemala (5.5%)
		Netherlands	250	0.00%	Brazil (40.4%), Peru (20.8%), Cote D Ivore (6%), Spain (5.6%), USA (4%)
		China	177	0.00%	Thailand (84.7%), Malaysia (7.9%), Philippines (2.8%), Taiwan (2.8%), Australia (1.7%)
		Germany	157	0.60%	Brazil (40.8%), Peru (21.7%), Spain (9.6%), Cote D Ivore (5.1%), Israel (3.8%)
		United Kingdom	128	0.80%	Brazil (19.5%), Peru (13.3%), Ghana (11.7%), Netherlands (7.8%), Pakistan (5.5%)
		World	2239	3.20%	Thailand (18.7%), Brazil (15.6%), Mexico (14.5%), Peru (10.9%), Philippines (3.9%)

200799	Jams, jellies, marmalades, purees or pastes of fruit nes	USA	238	4.20%	Canada (19.3%), France (15.5%), Mexico (12.2%), Chile (11.3%), Argentina (4.2%)
		Germany	225	0.40%	Belgium (16.9%), Australia (16.4%), Italy (14.7%), France (11.1%), Turkey (8%)
		France	207	0.00%	Belgium (23.7%), Netherlands (20.8%), Italy (20.8%), Germany (15.5%), Spain (6.8%)
		Netherlands	134	3.70%	Turkey (20.9%), Germany (18.7%), Belgium (18.7%), France (9.7%), Ireland (4.5%)
		United Kingdom	131	0.00%	France (29.8%), Belgium (17.6%), Germany (16%), Spain (15.3%), Italy (7.6%)
		World	2085	2.10%	France (14.1%), Germany (10%), Belgium (8.1%), Italy (6.8%), Chile (5.5%)
200520	Potatoes prepared/ preserved, not frozen	France	237	0.00%	Belgium (43.9%), Netherlands (31.2%), Germany (13.5%), United Kingdom (3.4%), Spain (3%)
		Germany	178	0.00%	Netherlands (66.9%), Belgium (14%), United Kingdom (3.9%), Sweden (2.8%), Denmark (2.8%)
		USA	143	0.00%	Mexico (48.3%), Canada (39.9%), Honduras (2.8%), Germany (2.8%), United Kingdom (2.1%)
		Netherlands	135	0.00%	Belgium (65.2%), Germany (16.3%), United Kingdom (11.9%), France (3.7%), Denmark (1.5%)
		Canada	124	0.00%	USA (92.7%), Mexico (5.6%), United Kingdom (1.6%)
		World	2063	0.00%	Netherlands (16.6%), USA (13.5%), Belgium (13.2%), Germany (10.8%), United Kingdom (6.5%)
200912	Orange Juice not frozen value not exceeding 20	Belgium	511	0.00%	Brazil (75.9%), USA (12.1%), Germany (6.5%), France (2.2%), Italy (2%)
		France	352	0.00%	Belgium (28.7%), Spain (27.3%), Germany (14.8%), Brazil (14.2%), Austria (5.7%)
		Netherlands	236	0.00%	Brazil (57.6%), Germany (25.4%), Belgium (7.6%), United Kingdom (3.4%), Costa Rica (1.7%)
		Canada	230	0.00%	USA (81.3%), Brazil (18.7%)
		Germany	159	0.00%	Brazil (37.6%), Netherlands (36.9%), Italy (14%). Austria (4.5%), Spain (3.8%)
		World	2058	0.00%	Brazil (38.3%), USA (14.5%), Germany (11.5%), Spain (8%), Belgium (7.4%)
200979	Apple Juice Value greater than 20 nes	USA	589	0.00%	China (63.2%), Chile (14.1%), Argentina (4.45), Italy (3.9%), Turkey (3.7%)
		Germany	301	0.00%	Poland (49.8%), Austria (17.6%), Italy (7.3%), Turkey (5.6%), Moldova Rep (5.3%)
		Russia	138	0.00%	China (60.1%), Ukraine (15.2%), Poland (13%), Iran (5.1%), Uzbekistan (3.6%)
		Japan	137	0.00%	China (69.3%), Austria (10.9%), Brazil (6.6%), Chile (5.1%), South Africa (3.6%)
		Netherlands	103	0.00%	Poland (22.3%), Turkey (21.4%), Germany (17.55), Austria (14.6%), China (7.8%)
		World	2011	0.00%	China (35.3%), Poland (14.1%), Austria (7.4%), Chile (6.1%), Turkey (5.4%)

200570	Olives prepared/ preserved , not frozen	USA	454	0.00%	Spain (52%), Greece (27.1%), Morocco (8.8%), Italy (4.8%), Turkey (2.2%)
		France	138	0.00%	Morocco (45.7%), Spain (41.3%), Belgium (5.8%), Greece (2.2%), Turkey (1.4%)
		Germany	136	0.00%	Spain (38.2%), Greece (30.9%), Turkey (22.1%), Italy (4.4%), Morocco (2.2%)
		Brazil	133	0.00%	Argentina (48.9%), Spain (27.8%), Peru (20.3%), Portugal (1.5%), Egypt (0.8%)
		Italy	118	0.00%	Spain (59.3%), Greece (27.1%), Morocco (7.6%), Egypt (3.4%), Chile (0.8%)
		World	1760	0.00%	Spain (46.6%), Greece (21.1%), Morocco (8.9%), Turkey (5.4%), Argentina (4.3%)
200911	Orange Juice Frozen	USA	451	0.00%	Brazil (59.4%), Mexico (28.4%), Costa Rica (6.7%), Canada (3.1%), Belize (2.2%)
		Germany	195	0.00%	Brazil (71.3%), Netherlands (`14.9%), Italy (4.6%), Mexico (3.6%), Austria (2.1%)
		France	135	0.00%	Brazil (55.6%), Netherlands (11.1%), Belgium (8.9%), Spain (6.7%), Austria (5.9%)
		China	120	0.00%	Brazil (69.2%), Israel (15.8%), Mexico (10.8%), Netherlands (1.75), USA (1.7%)
		Japan	93	0.00%	Brazil (47.3%), Israel (22.65), Mexico (19.45), Italy (6.55), Belize (2.2%)
		World	1689	0.00%	Brazil (52.4%), Mexico (12.4%), Netherlands (8.15), USA (4%), Israel (3.1%)
200990	Mixtures of Juices unfermented not containing spirit	France	159	0.00%	Germany (31.4%), Netherlands (24.5%), Spain (23.9%), Belgium (13.2%), Austria (1.9%)
		United Kingdom	151	0.00%	Spain (25.2%), Belgium (22.55), Netherlands (14.6%), Germany (11.3%), France (9.3%)
		UAE	100	0.00%	Saudi Arabia (74%), Netherlands (7%), Korea (4%), United Kingdom (3%), Thailand (3%)
		Canada	95	0.00%	USA (96.8%), South Africa (2.1%), France (1.1%)
		Oman	92	0.00%	UAE (66.3%), Saudi Arabia (32.6%), Netherlands (1.1%)
		World	1650	0.80%	Netherlands (13.6%), USA (12.55), Germany (11.9%), Saudi Arabia (10.8%), Spain (6.4%)
71290	Other vegetables/ Mixtures of vegetables	USA	207	0.50%	China (56.5%), Turkey (7.7%), Germany (6.3%), Mexico (3.9%), Egypt (3.9%)
		Japan	199	0.00%	China (87.4%), USA (6%), Vietnam (2.5%), Italy (0.5%), Taiwan (0.5%)
		Germany	170	2.40%	China (32.9%), Poland (16.5%), Netherlands (10%), France (7.6%), Italy (7.1%)
		Netherlands	128	0.00%	Germany (22.7%), Belgium (17.2%), Spain (17.25), Poland (7.8%), Italy (7%)
		Canada	66	3.00%	China (43.9%), USA (37.9%), Germany (4.5%), Turkey (3%), India (3%)
		World	1498	0.90%	China (45.7%), Germany (8.8%), USA (6.3%), Poland (4.6%), France (4.3%)

200210	Tomatoes whole or in pieces	United Kingdom	300	0.00%	Italy (74%), Germany (5.7%), Spain (4.7%), Portugal (4%), Greece (4%)
		Germany	216	0.00%	Italy (86.6%), Turkey (6%), Greece (1.4%), Spain (1.4%), Portugal (0.9%)
		France	122	0.00%	Italy (66.4%), Spain (26.25), Morocco (3.35), Turkey (1.6%), Germany (0.8%)
		Japan	111	0.00%	Italy (91%), Australia (2.7%), Turkey (1.8%), Thailand (1.8%), USA (1.8%)
		Australia	62	0.00%	Italy (90.3%), Turkey (4.8%), USA (3.2%), China (1.6%)
		World	1373	0.00%	Italy (73.8%), Spain (5.9%), USA (4%), Germany (3.45), Turkey (3.2%)
200190	Vegetables, fruit, nuts and other edible parts of plants, prepared or preserved by vinegar or acetic acid	USA	310	0.60%	Mexico (49%), Peru (11.9%), Spain (9%), Turkey (8.7%), Honduras (3.5%)
		Germany	160	2.50%	Turkey (24.2%), Greece (16.3%), Netherlands (10.6%), South Africa (8.1%), Hungary (7.5%)
		United Kingdom	133	13.50%	Netherlands (23.3%), India (13.5%), Spain (12%), Turkey (9%), Italy (9%)
		Canada	86	3.50%	USA (54.7%), Greece (10.5%), Spain (5.8%), Mexico (4.7%), China (4.7%)
		Japan	79	0.00%	China (94.9%), Thailand (2.5%), Spain (1.3%), Mexico (1.3%)
		World	1336	3.40%	Mexico (13.2%), China (11.6%), Turkey (10.6%), Spain (6.8%), Germany (5.8%)
200811	Groundnuts Prepared/Preserved	France	124	0.00%	Netherlands (46.8%), Belgium (12.1%), USA (10.5%), Spain (9.7%), Argentina (8.1%)
		Japan	118	0.00%	China (89.8%), USA (10.2%)
		United Kingdom	110	0.90%	Netherlands (31.8%), Germany (26.4%), Luxembourg (16.4%), France (8.2%), USA (6.4%)
		USA	108	3.70%	Canada (40.7%), Mexico (27.8%), Argentina (16.7%), China (8.3%), India (3.7%)
		Canada	87	1.10%	USA (88.5%), Argentina (4.6%), China (4.6%), Philippines (1.1%), India (1.1%)
		World	1293	0.90%	China (21.7%), USA (16%), Netherlands (13.6%), Germany (9.6%), Argentina (9.2%)
200820	Pineapples Prepared/ Preserved	USA	352	0.00%	Thailand (49.7%), Philippines (29.8%), Indonesia (17.3%), China (1.1%), Vietnam (0.6%)
		Germany	95	0.00%	Thailand (50.5%), Kenya (27.4%), Netherlands (10.5%), Indonesia (7.4%, Philippines (2.1%)
		Spain	66	0.00%	Indonesia (27.3%), Thailand (22.7%), Kenya (18.2%), Philippines (15.2%), Germany (9.1%)
		Russia	55	0.00%	Thailand (85.5%), Vietnam (10.9%), Kenya (1.8%), Indonesia (1.8%)
		Netherlands	45	0.00%	Indonesia (37.8%), Thailand (31.1%), Kenya (13.3%), Germany (8.9%), Philippines (6.7%)
		World	1108	0.00%	Thailand (50.5%), Philippines (16.1%), Indonesia (16.1%), Kenya (6.9%), Germany (3.2%)

81120	Raspberries, blackberries, mulberries, loganberries, black, white or red currants and gooseberries (other than kiwi fruit)	Germany	217	0.00%	Serbia (41.5%), Poland (36.9%), Belgium (5.1%), Chile (3.2%), Netherlands (2.8%)
		USA	141	0.00%	Chile (63.8%), Serbia (12.8%0, Mexico (11.3%), Canada (6.4%), China (2.8%)
		France	126	0.00%	Serbia (44.4%), Belgium (15.1%) Poland (13.5%), Chile (7.9%), Cyprus (6.3%)
		Belgium	82	0.00%	Serbia (32.9%), Poland (23.2%), Netherlands (13.4%), Chile (8.5%), Germany (4.9%)
		United Kingdom	60	0.00%	Poland (25%), Belgium (18.3%), Netherlands (13.3%), Serbia (11.7%), Germany (11.7%)
		World	1042	0.00%	Serbia (27.4%), Poland (21.8%), Chile (18.3%), Belgium (5.8%), Netherlands (4.5%)
200490	Vegetables and Mixtures of vegetables nes	Japan	271	0.00%	China (26.7%), Thailand (19.5%), Vietnam (3.4%), Italy (1.65), USA (1.2%)
		France	106	0.00%	Belgium (28.3%), Italy (22.6%), Spain (19.8%), Netherlands (9.4%), Portugal (6.6%)
		USA	99	1.00%	Mexico (50.5%), China (9.1%), Honduras (8.1%), France (7.1%), Canada (6.1%)
		Germany	76	0.00%	Belgium (44.7%), Netherlands (17.1%), Poland (7.9%), Spain (6.6%), Italy (5.3%)
		United Kingdom	63	6.30%	Germany (23.8%), Spain (20.6%), Belgium (12.7%), Netherlands (9.5%), Italy (6.3%),
		World	1015	0.60%	China (21.5%), Belgium (13.4%), USA (8.3%), Germany (8.1%), Netherlands (7.4%)
200580	Sweet Corn Prepared/ Preserved	Germany	106	0.00%	Hungary (45.3%), France (35.8%), Thailand (8.5%), Poland (2.8%), Netherlands (2.8%)
		United Kingdom	101	0.00%	Spain (41.6%), Belgium (16.8%), Thailand (12.9%), France (8.9%), Germany (6.9%)
		JAPAN	91	0.00%	USA (47.3%), Thailand (39.6%), New Zealand (6.6%), China (4.4%), Vietnam (2.2%)
		Spain	70	0.00%	France (90%), Germany (4.3%), Belgium (2.9%), Thailand (1.4%), China (1.4%)
		France	56	0.00%	Hungary (46.4%), France (35.7%), Belgium (12.5%), Spain (3.6%), Thailand (1.8%)
		World	995	0.00%	France (23.3%), Thailand (20.2%), Hungary (19.3%), USA (13.9%), Spain (5.5%)
200870	Peaches Prepared/ Preserved	USA	137	0.00%	China (68.6%), Greece (24.1%), Chile (4.4%), Spain (1.5%), Mexico (0.7%)
		Germany	85	0.00%	Greece (68.2%), Spain (9.45), Italy (7.1%), South Africa (5.9%), Austria (4.7%)
		Mexico	78	0.00%	Chile (56.4%), USA (16.7%), Greece (11.5%), China (11.550, Argentina (2.6%)
		Japan	71	0.00%	China (77.5%), S Africa (15.5%), Greece (5.6%), France (1.4%)
		United Kingdom	49	0.00%	Greece (42.9%), Spain (30.6%), S Africa (12.2%), China (4.1%), Germany (4.1%)
		World	890	0.00%	Greece (31.35), China (24%), Chile (11.5%), Spain (9.4%), S Africa (8.5%)

81110	Strawberries Uncooked/ cooked by steaming or boiling in water, Frozen	USA	166	0.00%	Mexico (77.7%), Peru (7.2%), Chile (5.4%), Argentina (3.6%), China (2.4%)
		Germany	132	0.00%	Poland (38.6%), China (9.8%), Morocco (8.3%), Egypt (8.3%), Spain (7.6%)
		France	86	0.00%	Morocco (31.4%), Spain (23.3%), Poland (16.3%), Netherlands (9.3%), Belgium (4.7%)
		Japan	67	0.00%	China (43.3%), USA (22.4%), Chile (17.9%), Egypt (7.5%), Poland (3%)
		Netherlands	60	0.00%	Morocco (30%), Poland (23.3%), Belgium (11.7%), China (11.7%), Spain (8.3%)
		World	879	0.00%	Mexico (16.8%), Poland (16.6%), China (13.1%), Morocco (12.6%), Spain (6%)
200830	Citrus Fruits Prepared/ Preserved	USA	334	0.00%	China (78.4%), Mexico (17.4%), Swaziland (1.5%), Spain (0.6%), Thailand (0.6%)
		Japan	66	0.00%	China (81.8%), Spain (4.5%), Mexico (4.5%), USA (3%), France (1.5%)
		Germany	64	0.00%	China (43.8%), Spain (26.6%), Netherlands (17.2%), Turkey (6.3%), Austria (3.1%)
		United Kingdom	48	0.00%	Spain (31.3%), Turkey (25%), Swaziland (12.5%), Germany (10.4%), China (8.3%)
		China	44	0.00%	USA (43.2%), Korea (20.5%), Costa Rica (18.2%), Brazil (15.9%), Germany (2.3%)
		World	728	0.00%	China (54.3%), Mexico (9.6%), Spain (8.4%), USA (7.1%), Turkey (3.2%)
200310	Mushrooms Prepared/ Preserved	Germany	125	0.00%	Netherlands (42.4%), Poland (28%), China (14.4%), France (12.8%), Austria (0.8%)
		USA	110	0.90%	Netherlands (50%), China (11.8%), France (11.8%), Indonesia (9.1%), Spain (9.1%)
		France	85	0.00%	Netherlands (38.8%), Spain (35.3%), Poland (8.2%), France (8.2%), China (4.7%)
		Russia	36	0.00%	China (91.7%), Netherlands (8.3%)
		Italy	24	0.00%	Spain (37.5%), Netherlands (33.3%), Poland (25%), France (4.2%)
		World	693	0.10%	China (31.6%), Netherlands (30.9%), Poland (11.7%), Spain (11%), France (7.4%)
200969	Apple Juice nes	USA	112	0.00%	Argentina (76.8%), Australia (5.4%), Turkey (5.4%), Chile (4.5%), Mexico (3.6%)
		Japan	107	0.00%	Argentina (35.5%), USA (24.3%), Chile (15%), Brazil (10.3%), Australia (2.8%)
		Canada	61	0.00%	USA (49.2%), Argentina (23%), Chile (13.1%), Italy (4.9%), Spain (4.9%)
		Korea	38	0.00%	Chile (52.6%), USA (36.8%), Spain (7.9%), Italy (2.6%)
		Italy	32	0.00%	Spain (96.9%), Netherlands (3.1%)
		World	658	0.00%	Argentina (25.2%), Spain (24.5%), Italy (12.3%), USA (12.3%), Chile (9.7%)

Source: ITC Geneva; Exim Bank Research

Annexure III:

India's Share in Global Exports of Processed Fishery Sector

HS Code	HS Description	Importing Country	Value of Imports (US$ Mn)	Share of India in the market	Top Exporters to the Market (% Share)
030613	Frozen shrimps and prawns, whether in shell or not,	USA	5420	24.2%	India (24.2%), Indonesia (20.8%), Ecuador (16.6%), Vietnam (12.6%), Thailand (6.9%)
		Japan	2034	17.6%	Vietnam (22%), India (17.6%), Indonesia (17.6%), Argentina (7.5%), Thailand (7%)
		Spain	1221	3.0%	Argentina (28.3%), Ecuador (19.2%), China (7%), Nicaragua (6.9%), Morocco (5.2%)
		France	849	16.4%	Ecuador (29.8%), India (16.4%), Madagascar (9.3%), Vietnam (8.1%), Bangladesh (5.1%)
		Italy	570	8.9%	Ecuador (35.6%), Argentina (21.8%), Spain (12.6%), India (8.9%), Denmark (4.4%)
		World	17217	19.5%	India (19.5%), Vietnam (12.7%), Ecuador (12.3%), Indonesia (9.8%), China (6.1%)
030420	Fish fillets, Frozen	USA	3627	0.2%	China (45.2%), Chile (11.5%), Vietnam (11.1%), Indonesia (6%), Norway (4.5%)
		Japan	1912	0.1%	Chile (28.6%), Norway (16.5%), Korea (7.9%), China (5.7%), USA (5%)
		Germany	1473	0.1%	China (28.6%), USA (16.5%), Poland (7.9%), Netherlands (5.7%), Denmark (5%)
		United Kingdom	857	0.1%	China (26.4%), Iceland (19.5%), Russia (8.1%), Germany (6.8%), Norway (5.7%)
		France	834	0.1%	China (18.9%), Norway (9%), Chile (7.9%), USA (6.8%), Russia (5.8%)
		World	14919	0.1%	China (25.5%), Vietnam (10.9%), Chile (9.8%), Norway (7.2%), USA (4.5%)
030212	Fresh or chilled Pacific Salmon , Atlantic Salmon, Danube Salmon	Sweden	2802	0.0%	Norway (99.9%), Denmark (0.1%)
		Poland	826	0.0%	Norway (77.7%), Sweden (14.3%), United Kingdom (6.2%), Denmark (0.6%), Belgium (0.5%)
		USA	764	0.0%	Canada (52.45), Faeroe Island (16.6%), United Kingdom (15.4%), Norway (7.6%), Chile (5.8%)
		France	751	0.0%	Norway (63.5%), United Kingdom (25.2%), Ireland (3.7%), Sweden (3.5%), Denmark (1.6%)
		Russia	453	0.0%	Norway (76.6%), Faeroe Island (23%), United Kingdom (0.2%), Chile (0.2%)
		World	10015	0.0%	Norway (63.8%), Sweden (8.8%), Faeroe Island (5.7%), Chile (5.7%), United Kingdom (5.1%)
160414	Prepared/preserved tunas, skipjack and Atlantic bonito	USA	1097	0.0%	Thailand (43.4%), China (10.9%), Ecuador (9.9%), Vietnam (7.7%), Philippines (6.7%)
		Italy	804	0.0%	Spain (32.2%), Ecuador (11.9%), Seychelles (7.8%), Cote D Ivore (7.3%), Colombia (6.6%)
		France	635	0.0%	Seychelles (20.9%), Spain (20.8%), Cote D Ivore (13.7%), Ecuador (11.5%), Ghana (8.8%)
		United Kingdom	545	0.0%	Seychelles (18.9%), Mauritius (18%), Ghana (12.5%), Thailand (9.4%), Ecuador (7.5%)
		Spain	502	0.0%	Ecuador (38.2%), Mauritius (10.8%), El Salvador (10.4%), Thailand (7.8%), Papua N Guinea (7.6%)
		World	6863	0.0%	Thailand (29.1%), Ecuador (13.5%), Spain (8.9%), Mauritius (5.4%), Seychelles (4.6%)

030379	Frozen fish excluding livers and roes nes	China	1508	3.3%	Russia (49.5%), USA (9.7%), New Zealand (6.7%), Taiwan (3.8%), Thailand (3.7%)
		Korea	818	0.4%	China (35.8%), Russia (30.9%), Taiwan (8.1%), Senegal (4.9%), USA (4.8%)
		Japan	600	0.0%	USA (31.8%), Russia (13.8%), China (8.3%), Korea (7.3%), Iceland (6.3%)
		USA	424	2.1%	China (29.5%), Taiwan (11.1%), Korea (6.1%), Vietnam (5.2%), Brazil (4.5%)
		Thailand	274	12.4%	Indonesia (31.4%), Papua N Guinea (18.2%), India (12.4%), Pakistan (8.4%), China (6.9%)
		World	6828	2.1%	Russia (16.8%), China (12.9%), USA (6.3%), Taiwan (4.7%), Spain (3.4%)
030410	Fish fillets and other fish meat fresh or chilled	USA	2030	0.0%	Chile (58.7%), Norway (7.3%), Canada (5.5%), Iceland (4.4%), Honduras (4.3%)
		France	556	0.4%	Norway (30.6%), Iceland (15.8%), United Kingdom (10.8%), Denmark (10.6%) Netherlands (5.2%)
		Sweden	463	0.0%	Norway (90.5%), Denmark (4.5%), Germany (3.5%), Netherlands (1.1%), Estonia (0.4%)
		Germany	307	0.3%	Denmark (20.5%), Netherlands (19.2%), Norway (17.9%), Poland (9.1%), Sri Lanka (6.2%)
		Belgium	272	0.0%	France (27.9%), Iceland (21.7%), Netherlands (15.1%), United Kingdom (7%), Denmark (7%)
		World	5584	0.1%	Chile (24.6%), Norway (20.9%), Iceland (7.9%), Denmark (5.2%), Netherlands (5.1%)
160520	Shrimps & Prawns Prepared/ Preserved	USA	1439	7.9%	Thailand (32.3%), Vietnam (24%), Indonesia (15.4%), China (14.7%), India (7.9%)
		Japan	719	1.4%	Thailand (42.8%), Vietnam (34.4%), China (9.2%), Indonesia (9%), India (1.4%)
		United Kingdom	441	2.5%	Canada (33.1%), Thailand (11.1%), Vietnam (10.4%), Denmark (10.4%), Iceland (10.2%)
		Denmark	344	0.6%	Greenland (36.3%), Canada (30.5%), USA (8.7%), Vietnam (3.8%), Sweden (3.8%)
		Netherlands	292	2.4%	Morocco (38.4%), Indonesia (21.9%), Vietnam (15.1%), Belgium (5.8%), Canada (5.8%)
		World	4937	4.9%	Vietnam (22.4%), Thailand (21%), China (10.5%), Indonesia (8.5%), Canada (7.2%)
030269	Other Fish Fresh/ chilled excl liver & roes	Spain	587	0.0%	France (27.8%), Greece (13.1%), United Kingdom (9.7%), Morocco (8.7%), Portugal (7.7%)
		Italy	565	0.0%	Greece (44.4%), Spain (18.4%), Turkey (7.8%), France (7.6%), Croatia (5.5%)
		USA	409	0.0%	Mexico (17.6%), Canada (12.55), Panama (9.8%), Ecuador (9.5%), Greece (6.6%)
		France	252	0.4%	Spain (21%), Greece (19%), United Kingdom (13.5%), Netherlands (7.9%), Italy (4%)
		Portugal	202	0.0%	Spain (67.8%), Greece (15.8%), Netherlands (5.9%), Senegal (2.5%), Italy (2.5%)
		World	3526	0.7%	Greece (14.9%), Spain (9.5%), France (8.3%), Turkey (8.3%), United Kingdom (3.9%)

030749	Cuttle Fish and Squids excl live fresh/ chilled	Italy	453	5.5%	Thailand (25.8%), Spain (24.3%), China (9.1%), Vietnam (6.2%), India (5.5%)
		Spain	449	12.7%	Morocco (29.4%), Falkland Islands (26.9%), India (12.7%), China (7.3%), Mauritania (5.1%)
		China	444	0.7%	Korea Dem P Republic (25.2%), USA (22.7%), Taiwan (10.4%), Indonesia (8.8%), Korea Republic (7.4%)
		Thailand	291	7.9%	China (32.6%), Peru (17.9%), Vietnam (16.2%), India (7.9%), Japan (5.8%)
		USA	242	8.7%	China (60.7%), India (8.7%), Thailand (8.7%), Argentina (5.4%), Taiwan (5%)
		World	3043	6.8%	China (22.2%), Thailand (8.7%), Spain (7.8%), India (6.8%), Morocco (6%)
030490	Other Fillets (excl frozen)& other fish meat	Japan	889	7.9%	USA (37.7%), Thailand (12.6%), Norway (10%), India (7.9%), China (6%)
		Korea	228	3.1%	Vietnam (41.2%), USA (24.6%), China (18%), Indonesia (4.8%), Pakistan (4.4%)
		Russia	127	5.5%	Iceland (34.6%), Thailand (12.6%), USA (12.6%), Norway (11.8%), Vietnam (8.7%)
		Canada	119	0.0%	China (64.7%), USA (16%), Norway (9.2%), Vietnam (3.4%), Chile (1.7%)
		Germany	118	0.0%	Norway (24.6%), USA (24.6%), Poland (8.5%), Netherlands (5.9%), United Kingdom (5.9%)
		World	2518	5.1%	USA (24%), Vietnam (13.8%), China (9.4%), Norway (8.8%), Thailand (6%)
030374	Mackerel excl livers& roes frozen	Nigeria	510	0.0%	Chile (16.9%), Netherlands (15.9%), Mauritania (9.4%), Norway (8.2%), UAE (7.8%)
		Egypt	206	1.0%	Netherlands (40.8%), Japan (13.1%), Norway (7.3%), Spain (6.8%), Taiwan (5.3%)
		China	199	0.0%	Norway (72.9%), Iceland (8%), United Kingdom (7.5%), Ireland (4%), Faeroe Island (2.5%)
		Russia	179	0.0%	Iceland (48.6%), United Kingdom (14.5%), Ireland (14.5%), Faeroe Island (9.5%), Norway (7.3%)
		Japan	136	0.0%	Norway (91.2%), United Kingdom (3.7%), Ireland (2.2%), Iceland (1.5%), Denmark (0.7%)
		World	2304	0.7%	Norway (24.8%), Netherlands (9.9%), United Kingdom (7.6%), Iceland (7.1%), China (6.9%)
160419	Other fish whole/ pieces , not minced, prepared/preserved	Japan	707	0.0%	China (83%), Thailand (6.4%), Vietnam (5.2%), Indonesia (3.7%), Philippines (0.7%)
		United Kingdom	222	0.0%	Germany (52.7%), Denmark (17.6%), Poland (15.8%), Netherlands (6.8%), Ireland (2.7%)
		Germany	164	0.0%	Poland (30.5%), Netherlands (28.7%), Denmark (12.8%), S Africa (7.9%), China (6.1%)
		Italy	148	0.0%	Germany (55.4%), Netherlands (16.2%), United Kingdom (10.1%), Spain (4.7%), Poland (3.4%)
		France	125	0.0%	Germany (57.6%), Denmark (15.2%), Netherlands (6.4%), France (3.2%), Malaysia (3.2%)
		World	2243	0.0%	China (38.4%), Germany (19.3%), Denmark (5.9%), Netherlands (5.3%), Poland (5.3%)

030799	Other Molluscs excl live fresh/chilled	Japan	542	0.4%	China (35.4%), Chile (14.9%), Thailand (10.3%), Russia (9.8%), Canada (4.8%)
		Hong Kong	498	0.0%	Japan (34.7%), China (18.9%), USA (7.2%), Australia (5.8%), S Africa (4.6%)
		Spain	356	26.4%	Peru (26.7%), India (26.4%), Argentina (14.9%), China (9.8%), Chile (4.8%)
		Italy	170	32.9%	India (32.9%), Spain (20%), Vietnam (8.2%), Peru (8.2%), Thailand (7.6%)
		China	104	0.0%	Korea (23.1%), Russia (16.3%), Peru (13.5%), Canada (11.5%), China (6.7%)
		World	2213	8.5%	China (22.5%), Japan (8.5%), India (8.4%), Peru (7.4%), Chile (6.3%)
030614	Crabs Frozen	USA	869	0.0%	Canada (54.9%), Russia (30.1%), Myanmar (2.8%), Argentina (2.8%), China (2.4%)
		Japan	498	0.0%	Russia (50.6%), Canada (22.3%), USA (19.3%), Spain (3%), Bahrain (1.2%)
		China	160	0.0%	Canada (58.1%), USA (23.1%), Chile (6.3%), Russia (3.1%), Namibia (1.3%)
		Hong Kong	116	0.0%	China (71.6%), Indonesia (6%), Chile (4.3%), Canada (4.3%), Japan (3.4%)
		Korea	101	1.0%	China (42.6%), Russia (25.7%), Bahrain (10.9%), Pakistan (5.9%), Namibia (3%)
		World	2095	0.2%	Canada (34.7%), Russia (28%), USA (8.6%), China (8.4%), Myanmar (2.1%)
160420	Other Prepared/ preserved fish	USA	165	6.7%	China (25.5%), Thailand (24.2%), Japan (17.6%), India (6.7%), Korea (6.1%)
		Japan	152	3.3%	China (59.2%), Korea (19.1%), Thailand (10.5%), Vietnam (3.9%), India (3.3%)
		Italy	149	0.7%	Spain (40.9%), Germany (18.8%), France (7.4%), Belgium (5.4%), Poland (4.7%)
		France	140	0.7%	Morocco (16.4%), Belgium (15%), Germany (13.6%), Lithuania (13.6%), Spain (5%)
		Hong Kong	123	0.0%	China (52%), Japan (15.4%), Taiwan (14.6%), Thailand (10.6%), Malaysia (4.9%)
		World	1869	2.1%	China (14.4%), Thailand (14.1%), Germany (5.6%), Spain (5.2%), Lithuania (4.3%)
030541	Pacific Salmon, Atlantic Salmon, Danube Salmon	Germany	643	0.0%	Poland (71.4%), Lithuania (14%), Norway (6.5%), Denmark (3%), United Kingdom (2.3%)
		Italy	240	0.0%	Poland (29.6%), Denmark (19.6%), Lithuania (15.4%), France (10.8%), Sweden (7.5%)
		France	121	0.0%	Poland (64.5%), United Kingdom (8.3%), Germany (6.6%), Belgium (6.6%), Lithuania (5%)
		USA	107	0.0%	Netherlands (46.7%), Chile (25.2%), Poland (7.5%), United Kingdom (6.5%), Denmark (6.5%)
		Belgium	103	0.0%	Lithuania (47.6%), Germany (24.3%), France (11.7%), Poland (8.7%), Netherlands (4.9%)
		World	1679	0.0%	Poland (40.1%), Germany (12.4%), Lithuania (11.9%), Denmark (7.7%), Norway (5.2%)

030759	Octopus other than live fresh/chilled	Korea	347	0.3%	China (47.6%), Vietnam (34.6%), Thailand (8.6%), Mauritania (3.5%), Indonesia (3.2%)
		Spain	330	0.9%	Morocco (51.5%), Mauritania (16.7%), Portugal (13.9%), China (3.3%), Mexico (2.7%)
		Japan	305	0.3%	Mauritania (34.4%), Morocco (32.1%), China (22.6%), Vietnam (6.6%), Thailand (1.6%)
		Italy	287	2.4%	Morocco (26.8%), Spain (20.6%), Mexico (9.8%), Mauritania (7.3%), Senegal (7.0%)
		Portugal	93	0.0%	Spain (51.6%), Mauritania (15.1%), Morocco (10.8%), Mexico (9.7%), Tanzania (4.3%)
		World	1622	1.2%	Morocco (22.8%), China (17.6%), Mauritania (13.3%), Spain (10.8%), Vietnam (10.5%)
030343	Skipjack or stripe-bellied bonito excluding livers and roes frozen	Thailand	749	0.0%	Taiwan (21.1%), USA (19.8%), Vanuatu (6.9%), Indonesia (6.7%), Japan (6.7%)
		China	92	0.0%	Marshall Island (43.5%), Taiwan (29.3%), USA (12%), Micronesia (4.3%) Indonesia (2.2%)
		Mauritius	83	0.0%	Spain (57.8%), Seychelles (16.9%), France (12%), New Zealand (8.4%), Indonesia (1.2%)
		Spain	78	0.0%	Neth Antilles (23.1%), Panama (23.1%), Cape Verde (19.2%), Guatemala (10.3%), Seychelles (6.4%)
		Vietnam	62	0.0%	Taiwan (32.3%), USA (14.5%), Korea (11.3%), Vanuatu (8.1%), Kiribati (4.8%)
		World	1357	0.0%	Taiwan (16.4%), USA (13.9%), Spain (7.4%), Marshall Islands (6.5%), Indonesia (5.7%)
030729	Scalops Chlamys other than live fresh/ chilled	USA	312	0.0%	Japan (45.8%), China (22.8%), Peru (10.9%), Canada (10.3%), Argentina (7.4%)
		Hong Kong	239	0.0%	Japan (53.1%), China (33.1%), Canada (5.9%), USA (2.9%), Australia (2.1%)
		France	196	0.0%	Peru (39.3%), Canada (19.4%), Argentina (11.7%), United Kingdom (11.2%), USA (8.7%)
		China	91	0.0%	Japan (98.9%), Peru (1.1%)
		Canada	75	0.0%	USA (33.3%), Peru (20%), China (20%), Japan (14.7%), Argentina (12%)
		World	1321	0.0%	Japan (32.5%), China (18.9%), Peru (12.4%), USA (8.9%), Canada (8.6%)
030622	Lobster(not frozen)	USA	360	0.0%	Canada (100%)
		Canada	307	0.0%	USA (100%)
		China	160	0.0%	Canada (51.9%), USA (47.5%), United Kingdom (0.6%)
		France	79	0.0%	United Kingdom (39.2%), USA (34.2%), Ireland (11.4%), Canada (11.4%), Belgium (1.3%)
		Korea	68	0.0%	USA (55.9%), Canada (44.1%)
		World	1313	0.0%	USA (45.8%), Canada (44.9%), United Kingdom (4%), Netherlands (1.1%), France (0.8%)
030360	Cod excluding livers& roes frozen	China	500	0.0%	Russia (36.8%), Norway (27.2%), USA (27.2%), Greenland (2.8%), Netherlands (2.2%)
		Portugal	150	0.0%	Netherlands (58%), Spain (13.3%), Russia (9.3%), Sweden (8.7%), USA (6%)
		Netherlands	78	0.0%	Norway (44.9%), Russia (29.5%), USA (23.1%), Greenland (2.6%)
		Denmark	70	0.0%	Greenland (42.9%), USA (18.6%), Germany (15.7%), Norway (12.9%), Russia (8.6%)
		Poland	63	0.0%	Russia (47.6%), Norway (38.1%), Faeroe Islands (4.8%), Germany (3.2%), Netherlands (1.6%)
		World	1259	0.0%	Russia (27.7%), Norway (23.2%), USA (22.9%), Netherlands (8.4%), Portugal (4.8%)

160510	Crab Prepared/ Preserved	USA	732	4.2%	Indonesia (35%), China (18.3%), Philippines (12.6%), Vietnam (8.9%), Thailand (5.7%)
		Japan	239	0.0%	China (60.3%), Korea (19.7%), Indonesia (12.6%), Vietnam (4.6%), Thailand (1.7%)
		Hong Kong	76	0.0%	China (78.9%), Canada (5.3%), Thailand (3.9%), Japan (3.9%), Indonesia (2.6%)
		France	39	0.0%	Vietnam (33.3%), Belgium (25.6%), Indonesia (12.8%), Chile (7.7%), Canada (5.1%)
		Singapore	29	0.0%	China (44.8%), Thailand (24.1%), Indonesia (6.9%), Philippines (3.4%), Canada (3.4%)
		World	1227	2.6%	China (30.1%), Indonesia (25.6%), Vietnam (8.5%), Philippines (7.7%), Thailand (5%)
030319	Other Pacific Salmon excluding Sockeye Salmon Frozen	Japan	512	0.0%	Chile (91.6%), Russia (4.5%), USA (2%), Canada (1.6%), New Zealand (0.4%)
		China	399	0.0%	USA (53.4%), Russia (21.1%), Japan (18%), Chile (5%), Canada (2%)
		Thailand	72	0.0%	USA (59.7%), Chile (19.4%), Japan (15.3%), Canada (4.2%), Russia (1.4%)
		Russia	52	0.0%	Chile (92.3%), USA (5.8%), Canada (1.9%)
		Korea	16	0.0%	USA (50%), Chile (37.55), Russia (12.5%)
		World	1207	0.0%	Chile (48.4%), USA (29%), Russia (9.9%), Japan (7.5%), Canada (2.7%)

Source: ITC Geneva; Exim Bank Research

Annexure IV:

India's Share in Global Exports of Processed Meat Sector

HS Code	HS Description	Importing Country	Value of Imports (US$ Mn)	Share of India in the market	Top Exporters to the Market (% Share)
020230	Boneless meat of bovine animals, frozen	USA	3011	0.0%	Australia (51.8%), New Zealand (32.8%), Nicaragua (6.5%), Uruguay (4.5%), Canada (1.7%)
		Russia	2160	0.0%	Brazil (60.4%), Paraguay (25.8%), Argentina (4.3%), Uruguay (4.2%), Belarus (1.1%)
		Hong Kong	1687	0.0%	Brazil (51.9%), USA (36.4%), Australia (3.4%), Canada (2.8%), New Zealand (1.2%)
		Japan	1283	0.0%	Australia (48.9%), USA (36.9%), New Zealand (7.2%), Canada (3.9%), Mexico (3%)
		Egypt	1186	44.8%	Brazil (49.9%), India (44.8%), USA (3.6%), New Zealand (0.6%), Australia (0.6%)
		World	16933	8.8%	Australia (24.2%), Brazil (19.5%), USA (10.8%), New Zealand (10%), India (8.8%)
020130	Boneless meat of bovine animals, fresh or chilled	USA	2045	0.0%	Canada (45.7%), Australia (24.8%), Mexico (24.5%), Nicaragua (1.9%), Uruguay (1.1%)
		Japan	1589	0.0%	Australia (53.2%), USA (41.7%), New Zealand (2.8%), Mexico (1.4%), Canada (0.8%)
		Germany	1322	0.0%	Netherlands (24.1%), Argentina (22.8%), Ireland (8.4%), Uruguay (6.7%), Brazil (5.9%)
		United Kingdom	1042	0.0%	Ireland (66.3%), Netherlands (8.4%), Australia (7%), Namibia (2.7%), Italy (2.7%)
		Mexico	884	0.0%	USA (86.8%), Canada (13%), Nicaragua (0.1%), Uruguay (0.1%)
		World	15033	0.8%	USA (18.2%), Australia (14.6%), Ireland (10.4%), Netherlands (9.5%), Canada (7.2%)
020329	Frozen meat of swine, nes	Japan	2680	0.0%	Denmark (25.2%), USA (16.8%), Spain (12.6%), Mexico (10.2%), Canada (8.6%)
		Russia	1320	0.0%	Brazil (58.4%), Canada (19.2%), Chile (5.8%), USA (5.3%), Belarus (3.6%)
		Korea	1074	0.0%	USA (29.1%), Germany (20.2%), Spain (10.4%), Chile (7.5%), Canada (6%)
		China	757	0.0%	USA (22.1%), Denmark (17.8%), Spain (16.9%), Germany (16.4%), France (7.1%)
		Hong Kong	574	0.0%	Brazil (32.1%), China (30%), Netherlands (10.1%), USA (7%), Germany (6.6%)
		World	11332	0.0%	USA (16.3%), Denmark (12.5%), Brazil (11.3%), Spain (10.9%), Germany (10.3%)
0020319	Meat of Swine, fresh / chilled	Japan	1623	0.0%	USA (62.7%), Canada (33.5%), Mexico (3.8%), Spain (0.1%)
		France	782	0.0%	Spain (75.4%), Germany (14.8%), Belgium (3.3%), Denmark (2.6%), Netherlands (1.8%)
		Germany	768	0.0%	Denmark (47.9%), Belgium (18.4%), Netherlands (13%), Spain (11.3%), France (3%)
		USA	720	0.0%	Denmark (51.1%), Belgium (19.6%), Netherlands (13.9%), Spain (12.1%), France (3.2%)
		United Kingdom	664	0.0%	Germany (30.6%), Denmark (20.8%), France (9.9%), Netherlands (9%), Spain (8.7%)
		World	9658	0.0%	Germany (22.8%), USA (16.7%), Spain (13.9%), Canada (13.4%), Denmark (8.9%)

160232	Meat or offal of fowls of the species "Gallus domesticus", prepared or preserved	Japan	1943	0.0%	Thailand (50.1%), China (49.4%), Korea (0.2%), USA (0.1%), Brazil (0.1%)
		United Kingdom	1289	0.0%	Thailand (47.3%), Brazil (11.6%), Netherlands (11%), Ireland (10.6%), Germany (4.6%)
		Netherlands	574	0.0%	Brazil (19.2%), Thailand (19%), Belgium (18.3%), United Kingdom (14.1%), Germany (13.9%)
		Germany	529	0.0%	Brazil (23.8%), Netherlands (21%), Thailand (13.8%), Austria (10.6%), Denmark (8.1%)
		Hong Kong	243	0.0%	China (31.7%), Thailand (10.3%), USA (7.4%), Turkey (7%), Netherlands (6.2%)
		World	6775	0.0%	Thailand (30.8%), China (16.6%), Brazil (7.2%), Netherlands (7%), Germany (6.4%)
020312	Hams, shoulders and cuts thereof, with bone	Italy	1456	0.0%	Germany (31.5%), Netherlands (18.8%), Denmark (16.4%), Spain (10.1%), France (8.4%)
		Mexico	1114	0.0%	USA (88.8%), Canada (11.2%)
		Germany	421	0.0%	Denmark (3.2%), Netherlands (33%), Belgium (20.4%), Spain (4.3%), France (1.2%)
		Poland	406	0.0%	Denmark (45.3%), Netherlands (24.1%), Germany (18.7%), Belgium (5.2%), France (4.4%)
		USA	246	0.0%	Canada (100%)
		World	4848	0.0%	USA (20.6%), Denmark (16%), Germany (15.5%), Netherlands (14.9%), Spain (9.8%)
020120	Meat of bovine animals, fresh/chilled	Italy	1209	0.0%	France (29.6%), Poland (19.1%), Netherlands (15.3%), Germany (14.3%), Austria (5.9%)
		Netherlands	486	0.0%	Germany (32.5%), Belgium (16.5%), Poland (10.3%), United Kingdom (8.8%), Austria (8.2%)
		Germany	410	0.0%	Netherlands (29.8%), Denmark (22%), France (18.3%), Poland (11.2%), Austria (5.6%)
		France	364	0.0%	Netherlands (34.1%), Germany (25.8%), Ireland (9.3%), Belgium (9.1%), Italy (6.3%)
		USA	347	0.0%	Mexico (74.6%), Canada (23.9%), Australia (1.4%)
		World	4497	0.02%	France (14.7%), Germany (13.5%), Netherlands (13.4%), Poland (10.5%), Mexico (5.8%)
160100	Sausages and similar products of meat, offal or blood	United Kingdom	582	0.0%	Germany (31.1%), Spain (14.1%), Ireland (11.5%), Italy (10.5%), Poland (10.1%)
		Germany	549	0.0%	Italy (29.9%), Austria (26.6%), France (12.6%), Netherlands (8.4%), Hungary (8.4%)
		France	275	0.0%	Germany (31.3%), Spain (30.2%), Italy (18.2%), Belgium (7.3%), France (2.9%)
		Japan	237	0.0%	China (36.7%), USA (24.9%), Thailand (19.8%), Brazil (6.3%), Italy (3.8%)
		Belgium	211	0.0%	France (28.9%), Germany (26.1%), Netherlands (23.2%), Italy (10.9%), Spain (8.1%)
		World	4448	0.02%	Germany (17.4%), USA (12.1%), Italy (11.9%), Spain (7.7%), France (5.1%)

050400	Guts-bladder and stomach of animals, whole and pieces thereof	Germany	642	0.6%	China (36.4%), Iran (8.9%), Netherlands (7.8%), Egypt (5.1%), Poland (4.8%)
		Netherlands	338	0.0%	China (58.3%), United Kingdom (13.9%), Germany (9.5%), Italy (7.7%), Belgium (2.4%)
		France	301	0.0%	Germany (16.6%), Morocco (16.3%), China (9.6%), Netherlands (9.3%), Australia (6.3%)
		Japan	282	0.0%	China (38.3%), Australia (32.6%), USA (12.8%), New Zealand (4.3%), Mexico (4.3%)
		China	235	0.0%	USA (24.7%), Netherlands (23%), Australia (12.3%), Denmark (12.3%), Spain (9.8%)
		World	3894	0.2%	China (26.4%), USA (10.9%), Germany (10.1%), Netherlands (6.1%), Australia (5.9%)
020649	Edible offal of swine, frozen	China	1402	0.0%	USA (37.5%), Denmark (16.5%), Germany (12%), Spain (8.8%), Canada (7.4%)
		Hong Kong	1031	0.0%	USA (23.4%), Germany (20.6%), Netherlands (12.9%), Brazil (10.5%), Poland (6.1%)
		Philippines	174	0.0%	Germany (22.4%), USA (17.2%), Spain (12.6%), Netherlands (11.5%), Canada (9.8%)
		Mexico	148	0.0%	USA (74.3%), Canada (22.3%), Chile (2.7%), Denmark (0.7%)
		Japan	79	0.0%	USA (74.7%), Canada (15.2%), Spain (3.8%), Netherlands (3.8%), Hungary (1.3%)
		World	3317	0.0%	USA (32%), Germany (15%), Denmark (8.5%), Spain (7.8%), Netherlands (7.6%)
020311	Fresh or chilled carcases and half carcases of swine	Germany	958	0.0%	Belgium (58%), Denmark (15.4%), Poland (5.5%), United Kingdom (5.1%), Netherlands (4.9%)
		Poland	430	0.0%	Belgium (74.4%), Germany (14%), Denmark (5.3%), Spain (2.6%), Netherlands (1.6%)
		Italy	397	0.0%	Germany (45.6%), France (28.5%), Spain (7.8%), Netherlands (7.8%), Belgium (6.8%)
		Greece	203	0.0%	Netherlands (64%), France (19.2%), Germany (6.9%), Spain (3%), Belgium (3%)
		Austria	134	0.0%	Germany (97%), Hungary (1.5%), Slovakia (0.7%), Italy (0.7%)
		World	2853	0.0%	Belgium (37.8%), Germany (20%), Netherlands (8.9%), France (7.4%), Denmark (6.5%)
021019	Meat of swine, salted, in brine; dried or smoked	United Kingdom	890	0.0%	Denmark (43%), Netherlands (32.7%), Germany (12.1%), Italy (7.1%), Ireland (3.9%)
		France	297	0.0%	Italy (42.1%), Spain (29%), Germany (20.9%), Belgium (5.4%), Portugal (0.7%)
		Germany	285	0.0%	Italy (47.7%), Spain (37.2%), Belgium (6.3%), Austria (6%), France (1.8%)
		USA	114	0.0%	Italy (68.4%), Canada (20.2%), Spain (7%), Germany (3.5%), Hungary (0.9%)
		Belgium	98	0.0%	Italy (48%), Germany (18.4%), Spain (15.3%), France (12.2%), Netherlands (5.1%)
		World	2568	0.0%	Italy (26.1%), Denmark (16.3%), Germany (15.9%), Spain (14.4%), Netherlands (12.9%)

160249	Prepared/preserved preparations of Swine	Hong Kong	483	0.0%	China (29%), Poland (9.1%), Spain (8.7%), Brazil (6.45), Italy (6%)
		Canada	275	0.0%	USA (100%)
		Japan	265	0.0%	USA (35.8%), China (35.5%), Thailand (17%), Denmark (4.95), Italy (3%)
		United Kingdom	212	0.0%	Ireland (42%), Denmark (20.8%), Germany (10.85), Belgium (5.7%), Poland (4.2%)
		Germany	129	0.0%	Austria (29.55), Denmark (27.9%), Italy (10.9%), Belgium (7.8%), Poland (6.2%)
		World	2393	0.0%	USA (20.9%), Germany (12.6%), China (11.4%), Denmark (7%), Ireland (4.6%)
020110	Carcases or half-carcases of bovine animals, fresh or chilled	Italy	484	0.0%	Netherlands (27.9%), France (24.8%), Poland (14%), Belgium (11%), Spain (10.3%)
		Netherlands	467	0.0%	Germany (22.9%), Poland (18.65), Belgium (17.3%), United Kingdom (9.6%), Ireland (7.7%)
		Germany	219	0.0%	Netherlands (26.5%), Poland (22.4%), France (22.4%), Belgium (7.8%), Ireland (5%)
		France	211	0.0%	Belgium (43.1%), Netherlands (22.3%), Italy (17.5%), Germany (7.1%), Spain (4.7%)
		United Kingdom	169	0.0%	Ireland (92.3%), Poland (7.1%), France (0.6%)
		World	2381	0.3%	Netherlands (12.6%), France (11.5%), Poland (11.4%), Belgium (10.8%), Spain (9.7%)
020442	Meat of sheep, frozen, bone-in	China	917	0.0%	New Zealand (57.4%), Australia (40%), Uruguay (2.6%)
		United Kingdom	222	0.0%	New Zealand (65.8%), Australia (27%), Ireland (2.7%), Netherlands (0.9%), Falkland Islands (0.9%)
		USA	213	0.0%	Australia (52.65), New Zealand (46.9%), Chile (0.5%)
		Germany	80	0.0%	New Zealand (87.5%), Netherlands (7.5%), Chile (2.5%), Belgium (1.3%), Ireland (1.3%)
		Malaysia	72	0.0%	Australia (73.65), New Zealand (25%), India (1.4%)
		World	2276	0.1%	New Zealand (54.5%), Australia (36.6%), Uruguay (2.8%), Netherlands (1.2%), Chile (1.1%)
160250	Prepared/preserved. preps. of bovine animals	United Kingdom	376	0.0%	Ireland (44.1%), Brazil (41.5%), Denmark (3.5%), Belgium (2.1%), Sweden (2.1%)
		USA	324	0.0%	Brazil (67.6%), New Zealand (11.7%), Uruguay (9.6%), Canada (6.55), Australia (2.2%)
		Hong Kong	241	0.8%	Paraguay (17%), USA (9.1%), Brazil (7.9%), Ireland (7.5%), China (6.2%)
		Canada	211	0.0%	USA (90.5%), Brazil (8.1%), New Zealand (0.9%), Argentina (0.5%)
		Germany	104	0.0%	Brazil (15.4%), Netherlands (14.4%), Poland (13.5%), Belgium (11.5%), Denmark (11.5%)
		World	2164	0.1%	Brazil (26.3%), USA (11.5%), Ireland (10.4%), Germany (6.7%), Belgium (4%)
020629	Edible offal of bovine animals, frozen	Hong Kong	987	0.0%	Brazil (64.5%), Argentina (10.5%), Australia (7.4%), USA (4.3%), Uruguay (3.3%)
		Mexico	173	0.0%	USA (87.9%), Canada (9.2%), Australia (2.9%)
		Korea	148	0.0%	Australia (56.1%), USA (31.85), New Zealand (11.5%), Canada (0.7%)
		USA	130	0.0%	Australia (41.5%), Canada (29.2%), Uruguay (12.3%), Mexico (8.5%), New Zealand (5.4%)
		Egypt	93	2.2%	USA (73.1%), Brazil (18.3%), Netherlands (3.2%), Australia (2.2%), India (2.2%)
		World	2105	1.5%	Brazil (32.1%), USA (17.8%), Australia (16.1%), Argentina (7.9%), New Zealand (4.6%)

160241	Prepared/preserved hams and cuts of swine	United Kingdom	564	0.0%	Ireland (38.5%), Poland (25.5%), Germany (13.1%), Italy (7.3%), Denmark (6%)
		France	156	0.0%	Germany (59.6%), Italy (21.85), Spain (9.6%), Belgium (5.1%), Ireland (1.3%)
		USA	123	0.0%	Poland (33.3%), Canada (33.3%), Italy (27.6%), Denmark (5.7%)
		Germany	99	0.0%	Austria (28.3%), Italy (25.3%), Spain (11.1%), Belgium (9.1%), Netherlands (7.1%)
		Belgium	78	0.0%	France (41%), Germany (24.4%), Italy (17.9%), Netherlands (7.7%), Spain (7.7%)
		World	1625	0.0%	Germany (20.5%), Poland (14.8%), Ireland (13.9%), Italy (12.9%), USA (6.2%)
020220	Meat of Bovine animals, Frozen	Korea	519	0.0%	USA (63.6%), Australia (23.9%), New Zealand (10.8%), Canada (1.5%), Chile (0.2%)
		Hong Kong	372	0.0%	USA (68%), Canada (18.5%), Brazil (9.1%), Mexico (1.3%), New Zealand (0.8%)
		China	259	0.0%	Australia (50.6%), Uruguay (37.5%), New Zealand (11.6%), Costa Rica (0.4%)
		Indonesia	40	0.0%	Australia (65%), New Zealand (27.5%), USA (7.5%)
		Malaysia	29	3.4%	Australia (48.3%), New Zealand (34.5%), Vietnam (13.8%), India (3.4%)
		World	1563	0.4%	USA (42%), Australia (21.3%), New Zealand (8.2%), Uruguay (6.7%), Canada (5.5%)
020422	Meat of sheep , fresh/chilled, bone-in	USA	281	0.0%	Australia (76.9%), New Zealand (22.4%), Iceland (0.7%)
		United Kingdom	256	0.0%	New Zealand (84.4%), Australia (12.5%), Ireland (2.3%), France (0.4%), Spain (0.4%)
		France	138	0.0%	New Zealand (40.65), United Kingdom (20.3%), Ireland (18.8%), Australia (9.4%), Belgium (7.2%)
		Belgium	76	0.0%	Netherlands (30.3%), Ireland (22.4%), France (17.1%), New Zealand (14.5%), United Kingdom (14.5%)
		Germany	55	0.0%	New Zealand (61.8%), Ireland (18.2%), United Kingdom (10.9%), Netherlands (5.5%), Belgium (1.8%)
		World	1148	0.0%	New Zealand (43.2%), Australia (36%), Ireland (6.65), United Kingdom (6.3%), Netherlands (2.6%)

Source: ITC Geneva; Exim Bank Research

Annexure V:

India's Share in Global Exports of Dairy Products

HS Code	HS Description	Importing Country	Value of Imports (US$ Mn)	Share of India in the market	Top Exporters to the Market (% Share)
040690	Cheese nes	Germany	3724	0.0%	Netherlands (37.2%), France (22.1%), Italy (7.7%), Switzerland (7.4%), Austria (6.6%)
		United Kingdom	1308	0.0%	Ireland (34.8%), France (13.4%), Italy (11.5%), Netherlands (11.2%), Germany (7%)
		Italy	1301	0.0%	Germany (46.3%), France (12.85), Netherlands (11.8%), Switzerland Liechestan (5.9%), Czech Republic (5.1%)
		Russia	1231	0.0%	Belarus (40.2%), Netherlands (10.2%), Lithuania (7.2%), Ukraine (6.3%), Poland (6.1%)
		USA	1173		Italy (25.7%), France (16.6%), Netherlands (7.2%), Switzerland Liechestan (7.1%), Spain (6.1%)
		World	19887	0.02%	Netherlands (18.6%), Germany (14.2%), France (13.7%), Italy (8.2%), Denmark (4.6%)
040221	Milk and cream in powder	China	3307	0.0%	New Zealand (91.2%), Australia (2.4%), Uruguay (1.9%), Argentina (1.5%), Chile (1.1%)
		Hong Kong	1456	0.0%	Netherlands (67.4%), Ireland (7%), New Zealand (6%), Singapore (5%), Australia (3.1%)
		Algeria	1042	0.1%	New Zealand (27.9%), Argentina (26.8%), France (10.1%), Ireland (7.2%), Belgium (6%)
		UAE	645	0.9%	New Zealand (74.3%), Oman (8.7%), Netherlands (4.3%), Australia (2.9%), Denmark (1.9%)
		Nigeria	475	1.1%	New Zealand (33.5%), Netherlands (30.7%), Ireland (12.6%), Denmark (4.6%), Sweden (4%)
		World	11317	0.2%	New Zealand (49.1%), Netherlands (14.3%), Argentina (4.7%), France (3.1%), Australia (3.1%)
040210	Milk and Cream in powder, general or solid form containing fat not exceeding 1.5% by weight	China	1124	0.0%	New Zealand (46.4%), USA (18.9%), Australia (7.1%), Germany (6.8%), France (6%)
		Mexico	829	0.0%	USA (95.2%), Poland (1.9%), Canada (1.1%), New Zealand (0.8%), Germany (0.4%)
		Algeria	742	1.8%	France (25.3%), Poland (24.4%), USA (13.5%), Belgium (12%), Germany (8.1%)
		Indonesia	648	0.0%	USA (30.2%), Australia (23.9%), New Zealand (17.7%), France (10.3%), Belgium (6.8%)
		Malaysia	581	3.8%	New Zealand (47%), USA (21%), Australia (10%), Germany (4.8%), Netherlands (4%)
		World	9944	1.4%	USA (21.5%), New Zealand (17.6%), Germany (9.4%), France (9.4%), Australia (6.3%)
040610	Fresh Cheese not fermented and curd	Italy	903	0.0%	Germany (59.2%), Lithuania (10.4%), Spain (9.7%), France (7.1%), Poland (5.2%)
		United Kingdom	643	0.0%	France (27.1%), Germany (24.1%), Denmark (17.1%), Italy (10.9%), Ireland (8.6%)
		Germany	476	0.0%	Denmark (32.1%), France (16.4%), Italy (15.8%), Austria (12%), Switzerland Liechestan (5.3%)
		France	393	0.0%	Italy (53.2%), Germany (16.8%), Spain (10.4%), Belgium (4.8%), Denmark (4.3%)
		Japan	383	0.0%	Australia (49.6%), USA (15.1%), New Zealand (15.1%), Italy (10.7%), Denmark (2.6%)
		World	5920	0.0%	Germany (24.9%), Italy (12.4%), France (11.7%), Denmark (8.6%), USA (7.2%)

040120	Milk and Cream containing fat > 1% but ≤6% by weight	Italy	947	0.0%	Germany (28.9%), France (24.5%), Austria (19.9%), Slovenia (12%), Hungary (6%)
		Germany	932	0.0%	Czech Republic (25.6%), Austria (19.3%), Belgium (17.8%), Denmark (10.7%), Poland (8.8%)
		Belgium	570	0.0%	Germany (46.8%), Netherlands (37.7%), France (13.7%), Luxembourg (1.2%), United Kingdom (0.5%)
		Netherlands	333	0.0%	Germany (60.1%), Belgium (27.6%), France (6%), United Kingdom (4.2%), Denmark (1.2%)
		China	279	0.0%	Germany (38.7%), Australia (14.7%), New Zealand (12.9%), France (8.6%), Korea (5.7%)
		World	5771	0.2%	Germany (19.2%), France (10.65), Austria (6.8%), Belgium (6.7%), Czech Republic (5.9%)
040510	Butter	France	816	0.0%	Netherlands (27.2%), Belgium (21.1%), Germany (18.3%), Ireland (9.3%), United Kingdom (4.8%)
		Russia	614	0.0%	Belarus (46.7%), Uruguay (14%), Australia (10.3%), New Zealand (8.1%), Finland (5.9%)
		Germany	538	0.0%	Ireland (46.7%), Netherlands (22.1%), Belgium (10.8%), France (4.1%), Poland (3.9%)
		Netherlands	441	0.0%	Germany (24%), New Zealand (20.9%), Ireland (18.4%), Belgium (13.4%), France (9.5%)
		Belgium	433	0.0%	Netherlands (46.4%), Germany (12.2%), France (12.2%), Ireland (11.3%), United Kingdom (4.8%)
		World	5716	0.2%	New Zealand (19.1%), Netherlands (13.1%), Ireland (11.9%), Germany (11%), France (7.6%)
040410	Whey	China	775	0.0%	USA (37.9%), France (20.5%), Netherlands (8.6%), Germany (7.2%), Argentina (5.9%)
		Netherlands	727	0.0%	Germany (48.7%), France (14.9%), Italy (6.9%), Poland (6.7%), United Kingdom (5.6%)
		Germany	310	0.0%	Italy (19%), Austria (19%), Netherlands (16.1%), Poland (11.3%), France (10.3%)
		France	293	0.0%	Italy (31.4%), Germany (23.9%), Spain (9.9%), Netherlands (8.9%), Switzerland Liechestan (6.1%)
		Indonesia	213	0.0%	France (25.4%), USA (17.4%), Argentina (12.2%), Netherlands (12.2%), Poland (10.8%)
		World	4532	0.0%	USA (17.4%), Germany (16.7%), France (14.6%), Netherlands (9%), Poland (4.9%)
040310	Yogurt	Spain	299	0.0%	France (60.5%), Germany (15.7%), Slovakia (9.7%), Portugal (5.7%), Austria (5%)
		Italy	282	0.0%	Germany (47.2%), Austria (21.3%), Greece (17.4%), France (7.1%), Czech Republic (2.5%)
		United Kingdom	253	0.0%	France (45.8%), Germany (19.4%), Greece (16.6%), Ireland (10.3%), New Zealand (4.3%)
		Germany	176	0.0%	Belgium (32.4%), Austria (31.3%), Luxembourg (9.1%), France (6.8%), Netherlands (5.7%)
		Portugal	173	0.0%	Spain (71.1%), France (16.2%), Germany (9.2%), Poland (1.2%), Austria (1.2%)
		World	2755	0.0%	Germany (24.5%), France (18%), Saudi Arabia (6.7%), Austria (6.4%), Spain (5.7%)

040630	Processed cheese not grated/powdered	United Kingdom	327	0.0%	Ireland (47.1%), Belgium (25.1%), France (12.2%), Germany (7.3%), Austria (5.2%)
		Italy	192	0.0%	Belgium (65.6%), Germany (13.5%), France (7.3%), Switzerland Liechestan (4.2%), Austria (4.2%)
		France	161	0.0%	Germany (54.7%), United Kingdom (27.3%), Austria (5%), Netherlands (4.3%), Ireland (2.5%)
		Germany	147	0.0%	Austria (37.4%), France (17.7%), Netherlands (14.3%), Ireland (9.5%), Poland (8.3%)
		Belgium	116	0.0%	France (44%), Germany (25%), Slovakia (11.2%), Netherlands (10.3%), Italy (6.9%)
		World	2609	0.0%	France (14.1%), Germany (12.7%), Belgium (10.1%), Ireland (6.7%), Australia (5.9%)
040590	Fats and oils derived from milk, and dehydrated butter and ghee	Belgium	214	0.0%	Ireland (29%), Germany (20.1%), Netherlands (15.4%), United Kingdom (14.5%), New Zealand (11.7%)
		Italy	173	0.0%	Netherlands (27.7%), France (22.55), Spain (19.1%), Belgium (15%), United Kingdom (8.7%)
		France	159	0.0%	Belgium (33.3%), Netherlands (32.7%), New Zealand (13.2%), Germany (9.4%), Spain (3.1%)
		China	148	0.0%	New Zealand (93.2%), USA (4.7%), Belgium (2%)
		Mexico	136	0.0%	New Zealand (80.9%), USA (11.8%), Chile (4.4%), Australia (2.2%), Belgium (0.7%)
		World	2018	1.4%	New Zealand (44.8%), Netherlands (13.8%), Belgium (7.8%), Germany (6.4%), France (6%)
040620	Grated or powdered cheese of all kinds	Netherlands	243	0.0%	Germany (51.4%), Belgium (16.5%), Denmark (9.5%), Austria (8.6%), Italy (7%)
		France	216	0.0%	Italy (44%), Belgium (15.7%), Netherlands (11.6%), United Kingdom (10.2%), Germany (10.2%)
		Germany	194	0.0%	Italy (42.3%), Netherlands (26.8%), Switzerland Liechestan (8.8%), France (5.2%), Austria (4.1%)
		Mexico	146	0.0%	USA (100%)
		Belgium	114	0.0%	France (46.5%), Netherlands (29.8%), Germany (10.5%), Italy (9.6%), United Kingdom (2.6%)
		World	1830	0.1%	USA (18.2%), Italy (16.4%), Germany (12.1%), Netherlands (9.9%), France (9%)
040390	Buttermilk, curdled milk and cream, and other fermented or acidified milk and cream, whether or not concentrated or flavoured or containing added sugar or other sweetening matter, fruits, nuts or cocoa	United Kingdom	372	0.0%	France (50.5%), Germany (22.3%), Belgium (17.2%), Ireland (4.3%), Netherlands (1.9%)
		Netherlands	123	0.0%	Germany (51.2%), Belgium (21.1%), France (20.3%), Italy (3.3%), Portugal (1.6%)
		Italy	96	0.0%	Belgium (27.1%), France (26%), Poland (18.8%), Germany (15.6%), Austria (4.2%)
		Philippines	81	0.0%	New Zealand (39.5%), Australia (14.8%), USA (13.6%), Netherlands (8.6%), Ireland (8.6%)
		Russia	80	0.0%	Belarus (82.5%), Finland (11.3%), Kazakhstan (2.5%), Ireland (1.3%), Lithuania (1.3%)
		World	1721	0.0%	Germany (20.7%), France (20.4%), Belgium (9.9%), New Zealand (7%), Netherlands (5.9%)

040490	Milk products of natural milk constituents, whether/ not sweetened , nes	USA	292	0.0%	New Zealand (95.5%), Canada (2.4%), Australia (1.4%), Ireland (0.3%), Germany (0.3%)
		Korea	120	0.0%	Netherlands (83.3%), Canada (6.7%), Germany (3.3%), France (2.5%), USA (1.7%)
		Italy	110	0.0%	France (83.6%), Germany (15.5%), Spain (0.9%)
		Morocco	82	0.0%	USA (42.7%), Netherlands (31.7%), New Zealand (11%), France (9.8%), Belgium (1.2%)
		Mexico	68	0.0%	USA (100%)
		World	1457	0.1%	New Zealand (26.8%), USA (16.8%), Netherlands (13%), France (12.3%), Germany (6.3%)
040291	Other milk or cream not containing sweeting matter	Greece	168	0.0%	Germany (46.4%), Netherlands (38.1%), Romania (8.3%), Belgium (4.8%), Cyprus (1.8%)
		Netherlands	118	0.0%	Germany (75.4%), Belgium (11%), France (5.9%), Spain (2.5%), Luxembourg (2.5%)
		UAE	109	0.0%	Netherlands (65.1%), Kuwait (7.3%), Germany (6.4%), Saudi Arabia (4.6%), Brazil (4.6%)
		France	88	0.0%	Belgium (28.4%), Luxembourg (22.7%), Spain (22.7%), Germany (12.5%), United Kingdom (4.5%)
		Hong Kong	85	0.0%	Netherlands (58.8%), Singapore (14.1%), Malaysia (12.9%), Thailand (11.8%), China (2.4%)
		World	1439	0.0%	Netherlands (28.6%), Germany (25.1%), France (5.4%), Belgium (5%), Saudi Arabia (3.5%)
040299	Other milk or cream containing sweetening matter	Poland	112	0.0%	Ireland (77.7%), Netherlands (17%), Germany (5.4%)
		UAE	107	0.0%	Netherlands (43.9%), Saudi Arabia (41.1%), Denmark (4.7%), Brazil (3.7%), Kuwait (2.8%)
		Russia	73	0.0%	Belarus (100%)
		France	60	0.0%	Belgium (45%), Germany (25%), Spain (20%), Luxembourg (5%), Netherlands (5%)
		United Kingdom	54	0.0%	Belgium (44.4%), Spain (22.2%), Netherlands (13%), Germany (13%), Ireland (7.4%)
		World	975	0.0%	Netherlands (16.8%), Belgium (10.5%), Germany (10.3%), Ireland (9.3%), Belarus (8.5%)

Source: ITC Geneva; Exim Bank Research

Annexure VI:

India's Share in Global Exports of Poultry and Egg Products

HS Code	HS Description	Importing Country	Value of Imports (US$ Mn)	Share of India in the market	Top Exporters to the Market (% Share)
020714	Frozen cuts and edible offal of fowls of the species Gallus domesticus	Hong Kong	1408	0%	Brazil (38.6%), USA (33.75), China (8.2%), Turkey (2.7%), Poland (2.5%)
		Japan	1318	0%	Brazil (83.1%), Thailand (11.3%), USA (4.2%), Philippines (1.3%), Denmark (0.1%)
		China	818	0%	Brazil (66.9%), USA (20.4%), Argentina (7.2%), Chile (3.2%), Poland (1.7%)
		Russia	573	0%	Brazil (46.1%), USA (28.65), Argentina (5.9%), Belarus (4.7%), Turkey (3.3%)
		United Kingdom	527	0%	Netherlands (48.6%), Poland (12.5%), Germany (6.1%), Chile (5.7%), Denmark (5.7%)
		World	10809	0%	Brazil (36.8%), USA (20.8%), Netherlands (9.4%), Poland (3.7%), Germany (3.2%)
020713	Fresh or chilled cuts and edible offal of fowls of the species Gallus domesticus	United Kingdom	806	0%	Netherlands (59.2%), Poland (14.5%), Ireland (8.2%), Germany (6.6%), Belgium (5.5%)
		France	552	0%	Belgium (36.2%), Netherlands (24.1%), Germany (16.8%), Poland (8%), Spain (4.5%)
		Mexico	542	0%	USA (100%)
		Germany	532	0%	Netherlands (49.1%), Poland (16%), Austria (11.3%), Belgium (7.9%), Italy (7.7%)
		Netherlands	386	0%	Germany (43.5%), Belgium (30.3%), United Kingdom (9.3%), Lithuania (6.7%), Poland (3.4%)
		World	4409	0%	Netherlands (26.4%), USA (20.3%), Germany (11%), Belgium (9.6%), Poland (9.5%)
040700	Bird's eggs, in shell, fresh, preserved or cooked	Germany	720	0%	Netherlands (73.9%), Poland (13.1%), Belgium (4%), France (2.5%), United Kingdom (1.1%)
		Netherlands	427	0%	Germany (43.1%), Belgium (21.1%), Poland (17.1%), France (5.4%), Spain (3.5%)
		Russia	308	0%	Netherlands (27.6%), Belarus (17.2%), Germany (13.3%), Czech Republic (8.4%), France (6.5%)
		Hong Kong	207	0%	China (49.3%), USA (23.2%), Thailand (12.1%), Malaysia (7.2%), Japan (1.9%)
		Mexico	176	0%	USA (94.3%), Brazil (1.7%), Spain (1.7%), Netherlands (1.1%), Canada (1.1%)
		World	3688	0.9%	Netherlands (22.7%), USA (12.9%), Germany (9.9%), Poland (8%), France (5.1%)
020712	Frozen fowls of the species Gallus domesticus, not cut in pieces	UAE	328	0%	Brazil (85.7%), France (6.7%), Oman (3%), Turkey (1.5%), Argentina (1.5%)
		Yemen	229	0.9%	Brazil (69.9%), France (24.5%), Argentina (3.1%), Ukraine (1.7%), India (0.9%)
		Kuwait	156	0.9%	Brazil (97.4%), France (2.6%)
		Egypt	148	1.4%	Brazil (91.9%), France (4.1%), India (1.4%), Paraguay (0.7%), Ukraine (0.7%)
		Oman	131	1.5%	Brazil (64.1%), France (13%), UAE (13%), Argentina (4.6%), India (1.5%)
		World	1898	0.5%	Brazil (59.5%), France (9%), Argentina (4.5%), Netherlands (3.5%), Ukraine (2.6%)

020726	Cuts and edible offal of turkey, fresh/chilled	Mexico	322	0%	USA (100%)
		Germany	308	0%	Poland (51.6%), Italy (16.9%), Austria (16.6%), United Kingdom (7.1%), Netherlands (4.9%)
		Austria	188	0%	Germany (65.4%), Hungary (20.2%), Italy (8%), Poland (6.4%)
		United Kingdom	102	0%	Poland (37.3%), Italy (21.6%), Ireland (17.6%), Germany (10.8%), Netherlands (7.8%)
		Belgium	94	0%	France (66%), Poland (14.9%), Germany (9.6%), Netherlands (5.3%), Italy (2.1%)
		World	1527	0%	USA (21.5%), Poland (21%), Germany (18.5%), Italy (10.5%), Hungary (8.1%)
020727	Frozen cuts and edible offal of turkeys of the species domesticus	Germany	142	0%	Netherlands (43.7%), Poland (21.1%), Brazil (7%), Austria (6.3%), France (4.9%)
		Mexico	116	0%	USA (84.5%), Chile (15.5%)
		Benin	75	0%	France (24%), Brazil (21.3%), Netherlands (10.7%), USA (6.7%), Spain (5.3%)
		China	59	0%	USA (93.2%), Chile (6.8%)
		France	57	0%	Germany (33.3%), Spain (19.3%), Poland (17.5%), United Kingdom (7%), Netherlands (5.3%)
		World	1008	0%	USA (23.9%), Brazil (13.4%), Netherlands (12.3%), Poland (10%), Germany (6.8%)
020711	Meat of fowls of species Gallus domesticus, not cut in pieces, fresh/chilled	United Kingdom	137	0%	Netherlands (27.7%), Belgium (20.4%), Ireland (13.9%), Poland (10.2%), France (10.2%)
		Russia	134	0%	Belarus (99.3%), Kazakhstan (0.7%)
		Germany	104	0%	Netherlands (43.3%), France (20.2%), Austria (15.4%), Belgium (6.7%), Italy (6.7%)
		Hong Kong	86	0%	China (97.7%), Australia (1.2%), New Zealand (1.2%)
		Belgium	41	0%	France (61%), Netherlands (36.6%), Germany (2.4%)
		World	945	0%	Belarus (14.1%), Netherlands (12.9%), China (9.9%), Poland (9.5%), France (9.4%)
040899	Bird's eggs not in shell, fresh, cooked by steaming or boiling in water, moulded, frozen or otherwise preserved, whether or not sweetened	Germany	73	0%	Netherlands (79.5%), Poland (6.8%), Denmark (5.5%), Belgium (2.7%), Latvia (2.7%)
		United Kingdom	70	0%	Netherlands (77.1%), France (10%), Belgium (8.6%), Germany (2.9%), Italy (1.4%)
		France	41	0%	Spain (36.6%), Belgium (24.4%), Netherlands (24.4%), Germany (7.3%), Denmark (2.4%)
		Netherlands	33	0%	France (45.5%), Belgium (21.2%), Italy (15.2%), Spain (9.1%), Germany (9.1%)
		Belgium	19	0%	Netherlands (68.4%), France (21.1%), Germany (10.5%)
		World	411	1.0%	Netherlands (38%), France (8.5%), Germany (8.3%), Belgium (6.8%), Spain (6.35)

Source: ITC Geneva; Exim Bank Research

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