FACE
CII-Jubilant Bhartia Food and Agriculture Centre of Excellence

CII
Confederation of Indian Industry

15th Edition

FoodpreO®

2024

INTERNATIONAL EVENT ON

FOOD PROCESSING & TECHNOLOGIES

FOOD PROCESSING SECTOR IN INDIA
Potential for Southern States

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List of Abbreviations	
AAGR	Average Annual Growth Rate
ABI	Agribusiness Incubator
AD	Accelerated Depreciation
AI	Artificial Intelligence
AIM	Atal Innovation Mission
AP	Andhra Pradesh
APCs	Agriculture Produce Clusters
APEDA	Agricultural And Processed Food Products Export Development Authority (APEDA)
APFPS	Andhra Pradesh Food Processing Society
APIIC	Andhra Pradesh Industrial Infrastructure Corporation
APIndus	Andhra Pradesh Industries
APLM	Model Agriculture Produce and Livestock Marketing (Promotion and Facilitation) Act, 2017
APMC	Agricultural Produce Market Committee
ASEAN	The Association of Southeast Asian Nations
ASI	Annual Survey of Industries
B2B	Business-To-Business
B2C	Business To Consumer
BAHS	Basic Animal Husbandry Statistics
BC	Backward Community
BCD	Basic Customs Duty
BCM	Billion Cubic Meters
BIS	Bureau Of Indian Standards
BPD	Banking Policy Department
CAGR	Compound Annual Growth Rate
CETP	Common Effluent Treatment Plants
CIE	Center For Innovation and Entrepreneurship IIT Hyderabad
CII	Confederation Of Indian Industry
CNSL	Cashew Shell Liquid
Codex	Codex Alimentarius
CPT	Cold Plasma Technology
COVID-19	Coronavirus Disease Of 2019
CPT	Cold Plasma Technology
CST	Central Sales Tax
D2C	Direct-To-Consumer
DCBR	Department of Cooperative Bank Regulation
DGFT	Directorate General of Foreign Trade
Digi-GOV	Digital Government
DPIIT	Department For Promotion of Industry and Internal Trade
EFA	Equity Funded Amount
E-Governance	Electronic Governance
EoDB	Ease Of Doing Business
ETP	Effluent Treatment Plants
EU	European Union
FBO	Food Business Operator

List of Abbreviations	
FDI	Foreign Direct Investment
FoSTaC	Food Safety Training & Certification
FPO	Framer Producer Organization
FRL	Full Reservoir Level
FSSA	Food Safety and Standards Act
FSSAI	Food Safety and Standards Authority of India
FY	Fiscal Year
G2B	Government-To-Business
GDP	Gross Domestic Product
GIS	Geographic Information System
GMI	General Manager of Industries
GoK	Government Of Karnataka
GOV	Government
GST	Goods and Services Tax
GSVA	Gross State Value Added
HACCP	Hazard Analysis Critical Control Points
HoReCa	Hotel, Restaurant, and Catering
HPP	High-Pressure Processing
HS	Harmonized Commodity Description and Coding System
HTST	High-Temperature Short-Time
HWTSDF	Hazardous Waste Treatment Storage and Disposal Facility
IBEF	India Brand Equity Foundation
ICRISAT	International Crops Research Institute for The Semi-Arid Tropics
IDA	International Development Association
IIDF	Infrastructure Investment Trust
IIT	Indian Institute of Technology
INR	Indian Rupee
IoT	Internet of Things
IP	Internet Protocol
ISB	Indian School of Business
ISO	International Organization for Standardization
ITC	International Trade Centre
KIADB	Karnataka Industrial Areas Development Board
KSIDC	Kerala State Industrial Development Corporation
K-SWIFT	Kerala Single Window Interface for Fast and Transparent Clearance
MEIS	Merchandise Exports from India Scheme
ML	Machine Learning
MoAFW	Ministry Of Agriculture & Farmers Welfare
MoF	Ministry Of Finance
MoFAHD	Ministry Of Fisheries, Animal Husbandry & Dairying
MoFPI	Ministry Of Food Processing Industries
MoSPI	Ministry Of Statistics and Programme Implementation
MPEDA	Marine Products Export Development Authority
MSES	Micro And Small Enterprises

List of Abbreviations	
MSME	Micro, Small and Medium Enterprises
MT	Metric Ton
NA	Not Available
NABARD	National Bank for Agriculture and Rural Development
NALSAR	National Academy of Legal Studies and Research
e-NAM	National Agriculture Market
NH	National Highways
NIL	None / Not in The List
NOCs	No Objection Certificates
NREDCAP	New & Renewable Energy Development Corporation Of
ODOP	Andhra Pradesh Ltd.,
ODOP	One District One Product
PAN	Permanent Account Number
PCB	Private Commercial Bank
PEF	Pulsed Electric Fields
PET	Polyethylene Terephthalate
PIB	Press Information Bureau
PLI	Production Linked Incentive
PLISFPI	Production Linked Incentive Scheme for Food Processing Industry
PMFME	Prime Minister Formalization of Micro Food Processing Enterprises
PMKSY	Pradhan Mantri Kisan Sampada Yojana
PP	Public-Private
PREPD	Prepared
PRESVD	Preserved
PVC	Polyvinyl Chloride
QTY	Quantity
RBI	Reserve Bank of India
RoDTEP	Remission Of Duties and Taxes on Exported Products
RTBI	Rural Technology and Business Incubator
RTC	Ready To Cook
RTE	Ready To Eat
RTS	Ready To Serve
SAARC	South Asian Association for Regional Cooperation
SAMPADA	Scheme For Agro-Marine Processing and Development
SAP-SINE	Science And Technology Entrepreneurs Park - Society for Innovation and Entrepreneurship
SC	Scheduled Caste
S-Cube	Swissnex India Accelerator, Sap-Sine Social
SDGs	Sustainable Development Goals
SDP	Single Desk Portal
SEAF	Small Enterprise Assistance Funds
SFAC	Small Farmers Agribusiness Consortium
SFAC	Small Farmers Agribusiness Consortium
SGST	State Goods and Services Tax
SHGs	Self Help Groups

List of Abbreviations	
SIDBI	Small Industries Development Bank of India
SIPCOT	State Industries Promotion Corporation Of Tamil Nadu
SMEs	Small And Medium Enterprises
SPS	Sanitary And Phytosanitary
SPVs	Special Purpose Vehicles
ST	Scheduled Tribe
STP	Software Technology Park
STS	Swachh Bharat Mission
TBIC	Technology Business Incubator
TE2022	Triennium Average of Year 2022.
TGIIC	Telangana Industrial Infrastructure Corporation Limited
T-Hub	Telangana Hub (India's Largest Incubator for Startups)
T-IDEA	Telangana Innovation and Digital Entrepreneurship Academy
TS-iPASS	Telangana State Industrial Project Approval and Self-Certification System
UAE	United Arab Emirates
UCBs	Urban Cooperative Banks
UK	United Kingdom
USA /US	United States of America
USD	United States Dollar
Uts	Union Terretories
UV	Ultraviolet
VAT	Value Added Tax
VFA	Vale Of Fixed Assets
WTP	Water Treatment Plant

Chapter 1

Overview of the Food Processing Sector

1.1. Introduction

The food processing industry in India plays a pivotal role in the country's economy and agricultural sector. It acts as a crucial link between India's agriculture sector and the industry, adding value to agricultural produce and creating a wide range of processed food products. The sector not only enhances the shelf life of perishable goods but also reduces post-harvest losses and ensures better market prices for farmers. It contributes significantly to employment generation, both directly in processing units and indirectly in supply chains, packaging, and logistics. Moreover, the food processing industry boosts export potential by transforming raw agricultural products into high-value, branded goods suitable for international markets. By promoting innovation and technological advancements, this industry supports food security, nutrition, and rural development, thereby aligning with the broader goals of the 'Make in India' initiative and the vision of transforming India into a global food manufacturing hub.

With a market size of USD 866 billion in 2022, the food industry will play a vital role in the economy's growth. The domestic food market is projected to grow by over 47% between 2022 and 2027, reaching US$ 1,274 billion (IBEF, 2024). [1]

India is already the leading producer of several agricultural commodities such as milk, pulses, banana, mango, pomegranate, papaya, lemon, okra, ginger and non-food crops like cotton and jute. It ranks second in the global production of rice, wheat, fruits and vegetables, eggs, tea and one of the leading producers of meat in the world (**Table 1**). During TE2022-23, India produced 292.4 million tonnes of cereals, 26.3 million tonnes of pulses, 345.8 million tonnes of horticulture, 220.6 million tonnes of milk, 130 billion eggs, and 9.3 million tonnes of meat (MoAFW, 2024b) (MoAFW, 2024a) (MoFAHD, 2023). The diversified production portfolio shows that the Indian processing sector has enormous potential to expand the basket of value-added products. Food processing sector plays an important role in reducing food losses as well as wastages by boosting value addition in raw agricultural produce, improving shelf life through innovative packaging, distributions and inventory management practices. A robust food processing industry supports agriculture by creating greater value in terms of revenue, livelihoods of farmers, ensuring higher remuneration to them as well as contributes to price stabilization.

Table 1:Production of Agricultural Commodities in India and Ranking (TE2022-23)

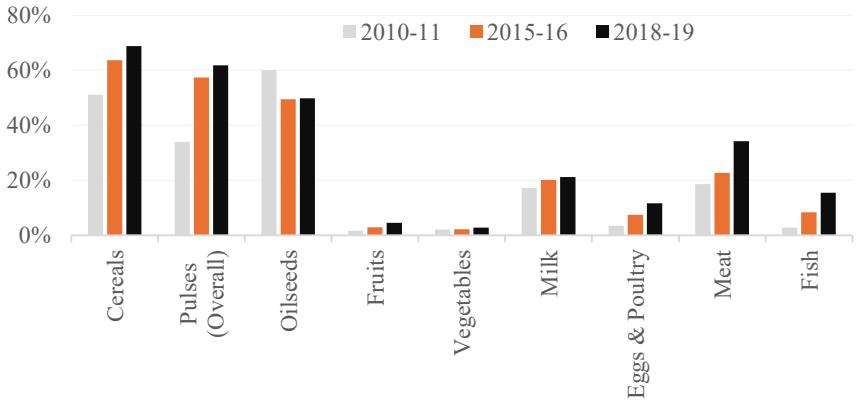
Commodity	*Production (TE2022-23)*	*Rank*
Cereals	292.4	3rd
Wheat	109.3	2nd
Rice (Paddy)	129.9	2nd
Pulses	26.3	1st
Groundnut	10.2	2nd
Sugarcane	445.1	2nd
Jute	9.2 million bales	2nd
Fruits	106.7	2nd
Vegetables	207.4	2nd
Milk	220.6	1st
Eggs	130 billion	2nd

Source: Department of Agriculture and Farmers Welfare (MoAFW, 2024a), (MoAFW, 2024b), Basic Animal Husbandry Statistics 2023 (MoFAHD, 2023)

1 https://www.ibef.org/blogs/an-overview-of-the-indian-food-processing-sector

Currently, India's food processing sector exhibits a wide disparity in processing levels across different crop categories. **Figure 1** illustrates that a significant portion of food grains and oilseeds undergo processing: 68.8% of cereals, 61.08% of pulses, and 49.8% of oilseeds are processed. In contrast, the processing levels for fruits and vegetables are relatively low, with only 4.5% of fruits and 2.7% of vegetables being processed. Furthermore, the data reveals that only 11.6% of poultry and 15.4% of fish are processed, while meat processing stands at 34.2%. This indicates a vast, untapped potential in the food processing industry, especially in fruits and vegetables, which could cater to the growing demand for processed fruits and vegetables in both domestic as well as export markets. The predominant form of processing in India remains primary processing, largely carried out by rice, sugar, edible oil, and flour mills, which goes through basic milling process (MoFPI-Deloitte, 2021).

Figure 1: *Commodity-wise processing levels in India*



Source: MoFPI-Deloitte 2021

However, primary processing offers lower value-addition compared to secondary processing that includes processing of high value items viz fruits and vegetables, dairy, bakery, chocolates etc. Thus, given the high production levels along with low current processing rates, the sector presents huge opportunities.

1.2. Growth and investments in the food processing sector

The food processing industry in India has grown at an average annual growth rate (AAGR) of about 5.35 percent (at 2011-12 prices) between 2015-16 to 2022-23. The COVID-19 pandemic adversely affected the sector due to its labor-intensive nature; however, it is now recovering. The Gross Value Added (GVA) in the food processing sector increased from INR1.30 lakh crore in 2013-14 to ₹1.92 lakh crore in 2022-23. In 2022-23, the sector accounted for 7.66 percent of the GVA in manufacturing at 2011-12 prices (MoF, 2024).

This sector is also a major employer, providing jobs to nearly 2 million workers across approximately 39173 registered units. These units have a combined fixed capital investment of USD 32.85 billion 225787.02 and generate an aggregate output valued at USD 160 billion (ASI, 2024).

Looking ahead, the food processing sector is poised to grow fueled by increasing consumption, particularly in Tier-II and Tier-III cities. The sector's potential for expansion highlights its importance in driving economic development and employment in the country.

As per the latest Annual Survey of Industries (2021-22) data food processing accounted for 15.9 percent of the total number of factories and 16.7 percent of the operational factories and employed 11.4 percent of the workforce 14.1 percent of the output (ASI, 2024). Interestingly, food processing ranked number one on all these parameters. Besides being a large sourcing hub for agriculture produce, India has the advantage of a large and growing market. Changing consumption patterns due to urbanization, changes in the gender composition of work force, and growing consumption rates have contributed to the increase in the size of processed food market.

1.3. Key Sub segments of the food processing sector

Despite India's significant production strength in several commodities, the low processing levels, particularly in perishable commodities such as fruits and vegetables, fisheries, and poultry, present a substantial opportunity for the growth of the processing industry. As the world's second-largest producer of fruits and vegetables, India processes only 3.6 percent of its Fruits and Vegetable produce (MoFPI-Deloitte, 2021). However, surplus fresh produce can be converted into a variety of products such as frozen items (IQF), canned goods, pulp, puree, paste, sauces, snacks, dressings, flakes, dices, dehydrated items, pickles, juices, slices, chips, jams, and jellies. This can be done during surplus season when prices for fresh products are low and can be used.

Similarly, fisheries, with a processing level of just 15.4 percent, offer significant potential for expansion. Exporters are already processing fresh fish into canned and frozen forms. With growing demand for processed and ready-to-eat marine products in both domestic and international markets, the fisheries sector is poised for considerable growth.

The poultry sector has seen remarkable growth in India, driven by the success of private-sector-led integrated farming, and boasts high efficiency levels compared to many developed countries. However, current processing levels in poultry are at 11.6 percent, and 34.2 percent for meat, indicating significant opportunities for scaling up this segment. Converting eggs into egg powder and liquid eggs can open doors for Indian poultry products in global markets.

The dairy segment in India, with a 21.1 percent processing level, is comparatively advanced but still has substantial growth potential. The dairy sector offers tremendous opportunities for value-added products such as ghee, flavoured yogurt, butter (in various forms), flavoured milk, and cheese. The demand for such value-added products is increasing both domestically and globally.

1.4. *Key emerging segments of the food processing sector*

Due to increasing urbanization, a growing female workforce, and a rising young population, there has been a notable increase in the demand for ready-to-eat and ready-to-cook food products in India. Sales of packaged flatbreads (such as chapattis, naans, rotis, parathas, and kulchas), dessert mixes, and premium bakery goods (like croissants and filled muffins) have been rising over the years. The popularity of breakfast cereals such as muesli and granola, organic packaged foods, sauces, soups, noodles, pasta, chocolate confectionery, and specialized cheeses is also on the rise.

A growing preference for healthier and more sustainable dietary choices is leading to a significant shift in consumption patterns towards millets. This increased interest in millets has led various food companies and startups to introduce millet-based products, including snacks, breakfast cereals, flours, and ready-to-eat meals. Additionally, restaurants and culinary experts are incorporating millets into their menus, further popularizing these grains among urban populations. The International Year of Millets (IYOM) in 2023 played a pivotal role in boosting consumer demand and successfully reignited interest in millets, driven by their nutritional advantages and the promotion of diverse and appealing millet-based recipes.

Furthermore, the shift in consumer preferences towards lactose-free products and vegan diets has driven the development of innovative products such as plant-based meat and dairy alternatives in India. These dairy alternatives, derived from nuts, legumes, seeds, or grains, include almond milk, coconut milk, oat milk, and soy milk, catering to diverse dietary preferences and lifestyle choices. Similarly, products like vegan cheese and plant-based meat are becoming new age trends, significantly impacting the traditional Indian food market. The growth potential of these products presents an

emerging opportunity for the food processing industry to innovate, benefiting both the industry and consumers.

1.5. Global investments in the food processing sector

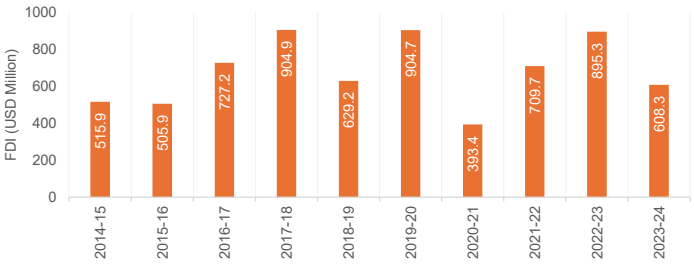
India has significantly improved its rank in the World Bank's Ease of Doing Business Survey from 142 in 2014 to 63 in 2020, a huge leap over the six years among 190 countries as per the World Bank's Ease of Doing Business Ranking 2020 (World Bank, 2019).

The government has taken several measures towards improving Ease of Doing Business which has helped the food processing sector in India. The Food Safety and Standards Authority of India (FSSAI) has shifted product-byproduct approval to ingredient and additive based approvals. Ministry of Food Processing is following a transparent selection process through online portal under its flagship schemes of Pradhan Mantri Kisan SAMPADA Yojana (PMKSY). Separate online portals have also been developed for other schemes (MoFPI, 2023a).

The food processing industry in India benefits from 100 percent FDI (Foreign Direct Investment) permitted under the automatic route for the manufacture and trading (including via e-commerce) of food products manufactured or processed in India. This supportive business environment has led to a steady increase in FDI inflow into the Indian food industry.

Since 2000-01, India has registered an FDI inflow of USD 12.6 billion. Between April 2014 and March 2024, the sector witnessed FDI equity inflow of USD 6.2 billion, with an average annual growth rate of 11 percent (DPIIT, Various Issues) (**Figure 2**). Higher FDI in the sector translates to greater investments, providing opportunities to enhance technology deployment, backend integration, and the overall growth of the food processing industry. Additionally, this increased investment leads to higher employment opportunities in the sector.

Figure 2: *FDI Equity Inflow in Food Processing Sector*



Source: DPIIT FDI Statistics

The Southern region of India dominates the food processing sector in terms of geographical distribution, with the highest number of registered factories (**Table 2**). Andhra Pradesh accounts for about 14.3 percent of these factories, followed by Tamil Nadu at 12.7 percent and Telangana at 9.6 percent. Ongoing initiatives to enhance the ease of doing business are expected to significantly bolster investor confidence and foster sustainable growth in the industry.

Table 2: State-wise number of registered food processing units in India

State	*No. of registered food processing units*	*% share*
Andhra Pradesh	5348	14%
Tamil Nadu	4764	13%
Telangana	3598	10%
Punjab	3200	9%
Maharashtra	2509	7%
Gujarat	2338	6%
Karnataka	2249	6%
Uttar Pradesh	2083	6%
Others	11379	30%
All India	37468	100%

Source: Annual Survey of Industries, 2021-22, MoSPI

1.6. Current export levels in the food processing sector

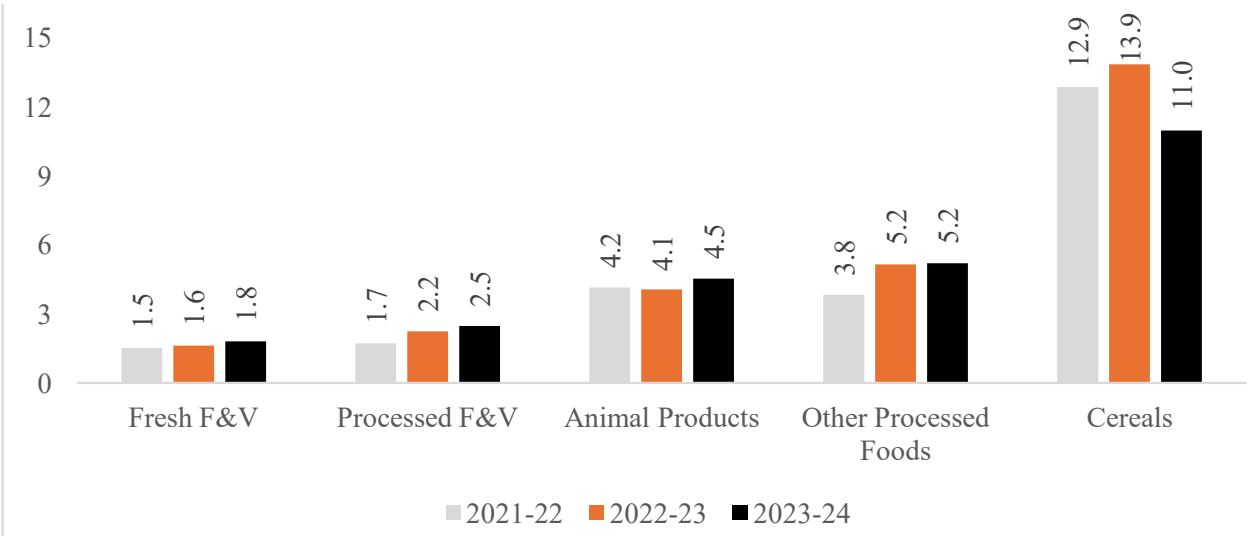
In 2023-2024, India's agricultural exports including processed food touched USD 48.9 billion. The percentage share of processed food exports in agri-exports has increased from 13.7% in 2014-15 to 25.6% in 2022-23 (IBEF 2024). While this is a decline of about 8 percent from USD 53.2 billion worth agricultural exports registered in 2022-23, agriculture exports remain a cornerstone of India's economy as it accounted for around 11 percent of the total merchandised exports from India. Agricultural exports as a share of agricultural GDP were 9.4 percent in 2022-23. Top 5 commodities in India's Agri exports basket include rice (USD 10.4 billion), followed by marine products (USD 7.3 billion), spices (USD 4.25 billion), bovine meat (USD 3.7 billion), and sugar (USD 2.8 billion). Indian agricultural products are exported to more than 100 countries/regions, with the chief markets being the Middle East, Southeast Asia, SAARC countries, the EU, and the US. However, India's total agriculture export basket accounts for only over 2 percent of the world agriculture trade.

In terms of worldwide exports, the processed food category is increasing far faster than the unprocessed food category - secondary and higher processed foods are growing at 5-6% CAGR, while unprocessed and primary foods are growing at 1-3% CAGR (IBEF 2024). [2]

During 2011-12 to 2020-21, the export of goods under the Ready to Eat (RTE), Ready to Cook (RTC), and Ready to Serve (RTS) divisions saw a CAGR of 10.4%. India exported finished food goods worth more than USD 2.14 billion in 2020-21 (IBEF 2024). [3]

The share of India's high-value and value-added agricultural produce in its agriculture export basket is less than 15 percent, compared to 25 percent in the US and 49 percent in China. This is despite India's geographical location, which gives it a unique advantage for exports, with convenient connectivity to Europe, the Middle East & Africa from the western coast, and Japan, Singapore, Thailand, Malaysia, Korea, Australia & New Zealand from the eastern coast.

Figure 3: *Percent growth in Indian Agriculture Export*



Source: APEDA

2 https://www.ibef.org/blogs/an-overview-of-the-indian-food-processing-sector
3 https://www.ibef.org/blogs/an-overview-of-the-indian-food-processing-sector

1.7. Equipment for food processing sector

In terms of import of Food Processing and Dairy Equipment, during 2023-24 India imported milking machines and dairy machinery worth (Rs. 1.11 billion) (DGFT) and during 2018-19 the highest valued imports were of machinery for manufacturing food/drink (Rs14.8 billion), bakery machinery (Rs 2.4 billion), parts of other food processing machinery (Rs 2 billion) and machinery for manufacturing confectionary cocoa or chocolate (Rs 1.9 billion).

While the consumer is shifting towards more advanced value-added food categories, there is also a growing demand for processing basic products such as fruits, vegetables and grains which require technologically advanced equipment. Thus, there is a huge demand for advanced methods, technology, and machinery with least impact on sensory qualities such as colour and texture.

In addition to availability of processing machinery, the next phase of growth of food processing sector will also require equipment and machinery that support infrastructure creation across the value chain. There is a massive requirement for pack houses at the farm gate, cold storage facilities across the value chain, multi-modal logistics infrastructure at port gateways with phytosanitary facilitation etc. Thus, equipment manufacturers specialising in manufacturing equipment for these infrastructural facilities have an edge.

Thirdly, as the industry landscape shifts, many food processing companies are attempting to expand their product line-up without making significant changes to their production process. Thus, versatile equipment that can produce many different product types, allowing companies to increase their output without major changes to their facilities will be preference.

Fourthly, the automation requirement in food processing equipment is quite advanced and sophisticated. Lastly, food processing requires high precision in the equipment for quality, safety and hygiene.

1.8. Policy Ecosystem

The Food Processing Sector has been accorded a 'high priority' sector under the 'Make in India' initiative by the Government of India. To boost this sector, the government has implemented several measures, including formulating favourable policies, creating a conducive growth environment, and rationalizing tariffs and duties. The Ministry of Food Processing Industries (MOFPI) serves as the nodal agency for policy formulation and implementation in the food processing industry.

With the overarching goal of positioning India as the 'Food Basket' of the world, several initiatives have been undertaken to promote value added products for both domestic consumption and exports. This vision aligns with the 'Make in India' initiative of the Government.

1.8.1. *Attracting Investments*

To attract foreign investments in the food processing sector, the government has taken following measures:

- 100% FDI permitted under the automatic route in food processing industries.
- 100% FDI permitted in the manufacture of food products and for trading (including through e-commerce) for food products manufactured and/or processed in India.

The aim is to increase FDI in the food processing industry, which offers huge opportunities for the sector through enhanced technology transfer, backend integration, expansion of the food processing industry, and increased employment by setting up more food processing units.

1.8.2. *Enabling Sourcing*

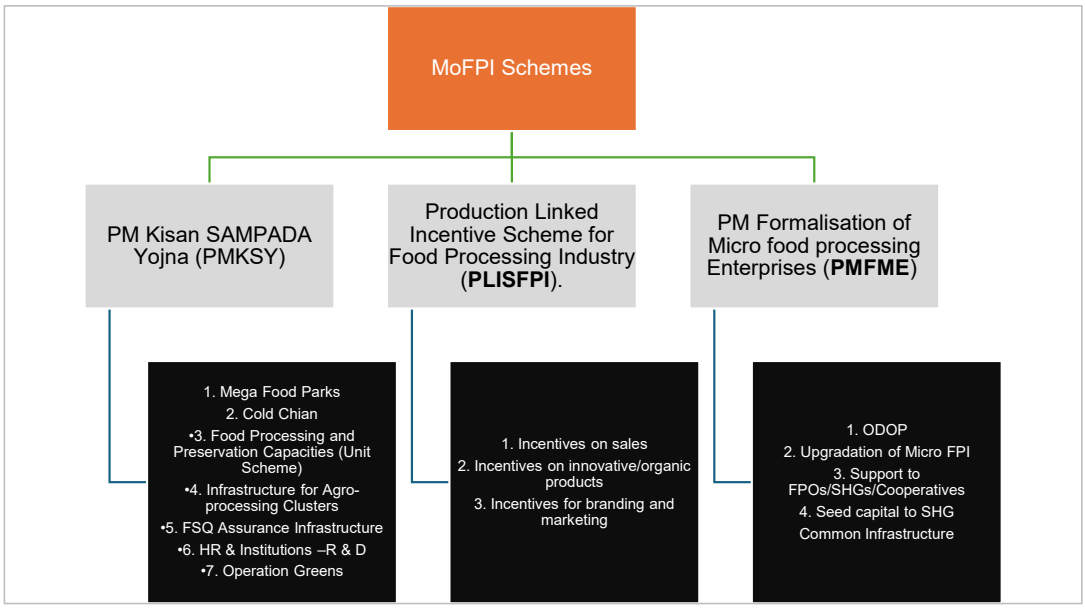
Alongside policies that support the food processing sector, several progressive marketing reforms and schemes have been introduced by Government of India for agricultural products, enhancing sourcing opportunities for food processing industries. tandem with policies enabling the food processing sector, several progressive marketing reforms and schemes have been launched for agricultural products, allowing for better sourcing opportunities for food processing industries.

- The Agricultural Produce and Livestock Marketing (Promotion and Facilitation) [APLM] Act 2017 includes provisions such as single licenses for traders and the de-listing of perishables from the ambit of the APMCs, both of which significantly improve sourcing for the food processing sector. However, the adoption of this Act by states needs to be expedited.
- In 2016, the government launched electronic National Agriculture Market (e-NAM) portal, a flagship initiative to digitally integrate marketing platforms across Indian states. Currently, 219 agricultural commodities are allowed for online trading on e-NAM platform. Around 1389 mandis in 27 states and Union Territories are integrated with the e-NAM platform. Also, 17.7 million farmers, 3803 FPOs, 0.26 million traders and around 0.1 million commission agents are registered with e-NAM (SFAC, 2024).

1.8.3. *Infrastructure Support*

Ministry of Food Processing Industries (MoFPI) has been implementing several schemes to augment private investment in the food processing sector and improve infrastructure. These schemes also aim to support FPOs and provide incentives on innovative products. Broadly, three major schemes are being implemented by MoFPI (**Figure 4**): Pradhan Mantri Kisan SAMPADA Yojana, Production Linked Incentive Scheme for Food Processing Industry (PLISFPI) and PM Formalisation of Micro food processing Enterprises (PMFME).

Figure 4: *Major MoFPI schemes*



Source: MoFPI

Pradhan Mantri Kisan SAMPADA Yojana

Government of India approved the umbrella Central sector scheme, SAMPADA- Scheme for Argo-marine processing and Development of Agro-processing Clusters, subsequently renamed as 'Pradhan Mantri Kisan SAMPADA Yojana (PMKSY) with a total allocation of Rs.6000 crore in 2017. The scheme was envisaged as a comprehensive package focusing on creating modern infrastructure with efficient supply chain management from farm gate to retail outlet. In the long term, the scheme aims to provide better returns to farmers, create employment opportunities, reduce wastage of agricultural produce, increase the level of processing, and enhance the export of processed foods. The component schemes of Mega Food Park, Creation of Backward & Forward Linkages, Human Resource & Institution - Promotional Activities, Skill Development & HACCP, a component of Food Safety and Quality Assurance Infrastructure have been discontinued in the 15th Finance Commission cycle with the provision of committed liability.

As of March 2024, of the 41 Mega Food Parks Projects approved by MoFPI, 7 are operational and complete, 17 are operational and 17 are under implementation.

PM Kisan SAMPADA Yojana is expected to leverage investment of Rs. 11,095.93 crore, benefiting 28,49,945 farmers and generating 5,44,432 direct/indirect employment in the country by the year 2025-26 (MoFPI, 2024a).

Production Linked Incentive Scheme for Food Processing Industry (PLISFPI)

To support creation of global food manufacturing champions commensurate with India's natural resource endowment and support Indian brands of food products in the international markets, the Central Sector Scheme – "Production Linked Incentive Scheme for Food Processing Industry (PLISFPI)" with an outlay of Rs.10900 crore was approved by the government in March 2021.

The scheme aims to incentivising manufacturing of Ready to Cook/ Ready to Eat (RTC/ RTE) foods including millets-based products, processed fruits & vegetables, marine products, mozzarella cheese and innovative/ organic products of SMEs including free range - eggs, poultry meat, egg products in these segments are also covered under above component (MoFPI, 2024b).

Around 173 applications are covered under the PLI Scheme, with an investment of INR 7690 crore. An incentive amount to the tune of INR 1070 crore was released in FY 2021-22 and FY 2022-23 (MoF, 2024).

PM Formalisation of Micro food processing Enterprises (PMFME)

The PM Formalisation of Micro food processing Enterprises (PMFME) scheme was launched with an aim to enhance the competitiveness of existing micro-enterprises in the unorganized food processing sector and promote formalization of the sector; and support Farmer Producer Organizations (FPOs), Self Help Groups (SHGs) and Producers Cooperatives along their entire value chain. The scheme envisages an outlay of INR 10,000 crores over a period of five years from 2020-21 to 2024-25. The expenditure under the scheme would to be shared in 60:40 ratio between Central and State Governments, in 90:10 ratio with Northeastern and Himalayan States, 60:40 ratio with UTs with legislature and 100% by the Centre for other UTs.

The scheme of One District One Product (ODOP) aims to reap the benefit of scale in terms of procurement of inputs, availing common services and marketing of products. The scheme will provide the framework for value chain development and alignment of support infrastructure. There may be more than one cluster of ODOP product in one district. There may be cluster of ODOP

product consisting of more than one adjacent district in a State. The list of products under the ODOP scheme is covered under 713 districts under 35 states (MoFPI, 2024c).

1.8.4. *Boosting export of processed agri and food products*

Towards boosting agricultural exports from India, the Agricultural Export Policy, 2018 has been formulated with a focused plan to boost India's agricultural exports to USD 60 billion by 2022. Strategic focuses under the policy include policy measures, infrastructure and logistics support, and greater involvement of state governments in Agri-exports.

Operational aspects will include a focus on clusters, promoting value-added produce, and marketing the "Brand of India." Identifying that India's export basket is dominated by products with little or no processing or value addition, the Agri Export Policy also focuses on promoting value-added, indigenous, and tribal products.

The policy seeks to diversify the country's export basket and destinations by boosting high-value and value-added agricultural exports through a focused cluster-based approach. This will shift the focus from the current scenario where a few commodities account for more than 50% of Indian Agri-exports, though these commodities will continue to be exported.

Under the new policy, export restrictions such as export duty, export bans, and quota restrictions on most processed agricultural products will be removed, barring commodities identified as essential from a food security perspective, such as onions.

1.9. Fiscal Incentives for the food processing sector

To promote investments in the food processing sector, favourable policies to the food processing units and the supportive infrastructure are given attractive tax incentives by the government.

1.9.1. *Goods and Service Tax (GST)*

For a favourable policy environment for the food processing sector, government has introduced lower GST slab rates for most of the basic food items. Of all food categories taken together under different chapter heads/subheads, almost 71.7 percent of the food items fall under the lowest slab of GST, i.e. 0-5 percent. While 33.1 percent of the food items have been exempted from GST and attract 0 percent GST, around 38.7 percent of the food items attracts 5 percent of GST. On the other hand, around 17.8 percent of the food items fall under the GST slab of 12 percent and 8.6 percent of food items fall under GST slab of 18 percent. The rest 1.9 percent of food items (only 5 items) attract 28 percent of GST.

Table 3: GST slab for food items

S. No.	*Tax Slab Rate*	*% share of Commodities*
1	0%	33.1
2	5%	38.7
3	12%	17.8
4	18%	8.6
5	28%	1.9

Source: MoFPI Annual Report 2022-23

Low GST for food products is likely to have a positive impact on the food processing sector and the prices of food. Keeping tax rates low on basic food items helps local products remain competitive against imported goods and further supporting domestic producers and processors. This translates to a positive impact on the food processing sector.

According to the industry, a rationalization of the GST rate structure for the food processing sector to 5% (suggested) for perishable food items and 12% (suggested) for non-perishable food items would further help boost the potential of food processing in India.

1.9.2. *Income Tax*

- Processing, Preservation, and Packaging of Food Products: This includes businesses involved in the processing, preservation, and packaging of fruits, vegetables, meat, meat products, poultry, marine, or dairy products. It also covers integrated businesses handling, storing, and transporting food grains. Such businesses are eligible for a 100 percent deduction of the profits and gains derived from these activities for the first five assessment years starting from the initial assessment year. Following this period, 25 percent (or 30 percent for companies) of the profits and gains can be deducted, ensuring the total deduction period does not exceed ten consecutive assessment years. This is applicable for businesses that commenced operations on or after April 1, 2001, under Section 80-IB, 11(A) of the Income Tax Act, 1961.
- Cold Chain and Warehousing Facilities: Businesses setting up and operating cold chain facilities or warehousing facilities for storing agricultural produce are eligible for a deduction of 100 percent of the expenditure incurred on investment. This is provided under Section 35-AD of the Income Tax Act, 1961.
- Bee-keeping and Production of Honey: Businesses setting up bee-keeping, and production of honey and bee wax, setting up and operating sugar warehouses are allowed a 100% deduction for expenditure incurred on investment, provided this investment is wholly and exclusively for the purpose (MoFPI, 2023a).

1.9.3. *Custom Duty*

- Goods related to food processing, imported as part of the Project Import, regardless of their tariff classification, are subject to a uniform assessment at a concessional basic customs duty rate of 5 percent. (Ref. Notification No. 12/2012 dated 17.3.2012)
- Cold storage, cold rooms (including farm-level pre-cooling), cold chain facilities including pre-cooling units, pack houses, sorting and grading lines, and ripening chambers are eligible for a concessional 5 percent Basic Customs Duty (BCD) as currently available under Project Import for cold storage and cold rooms.
- The customs duty on refrigerated containers has been reduced from 10% to 5%.
- Imports of raw materials and intermediate food items are exempt from import duty when imported against the export of finished products under the Advance Authorization scheme of the Department of Commerce.

1.10. Financing of the food processing sector

The food processing sector enjoys priority sector lending. Further, to boost easy access to finance, infrastructure status is provided for projects like Mega Food Parks and Cold Chain. A special fund of Rs. 2000 crore has been set up in the National Bank for Agriculture and Rural Development (NABARD) to provide credit at affordable rates to boost the food processing sector. Under this fund, loans are extended to individual entrepreneurs, cooperatives, farmers' producer organizations, corporates, joint ventures, SPVs, and entities promoted by the Government for setting up, modernization, and expansion of food processing units and development of infrastructure in designated food parks. Loans are extended up to 95% of the eligible project cost for entities promoted by the State Governments, while other categories of promoters are extended loans up to 75 percent of the project cost.

1.11. Regulatory Support to the food processing sector

Global food trade has surged in the past decade, leading to a transformation in food regulatory systems worldwide. The inception of India's Food Safety and Standards Authority (FSSAI) has driven significant evolution in the country's food regulations, with 22 regulations in place and a growing number of scientific panels. Collaboration with Codex Connect has enhanced national and international food standards. The evolution of food regulations in India is influenced by scientific, technological, economic, and cultural factors, emphasizing the need for a robust and adaptable regulatory framework to ensure public health and food safety while supporting industry growth through innovation and collaboration.

India's food sector is experiencing significant transformation driven by global reforms, impacting production and consumption patterns. The country's food processing industry is evolving with improved policies, focusing on harmonizing with international standards. Collaborative efforts between regulatory bodies and industry players are enhancing the development of science-based standards compatible with global practices, including aligning additives standards with Codex.

Chapter 2

Evolving food regulatory ecosystem

2.1. Introduction

Global food trade has grown rapidly in the past decade, leading to significant transformations in food regulatory systems. This has facilitated increased imports and exports of various foods among countries. India's processed food exports have notably risen, showcasing a higher demand for Indian products in international markets. The export of processed food from India has seen a significant upward trend over the past decade. The share of processed food exports in the country's total agricultural exports increased from 13.7% in 2014-15 to 25.6% in 2022-23. This growth reflects the increasing demand for Indian processed food products in international markets.1 To ensure food safety and quality along complex supply chains, adherence to food safety standards and globally harmonized regulations is crucial for fair trade, transparency, and efficient food control systems.

India's active participation in Codex processes, notably the establishment of the Codex committee on Spices and culinary herbs, showcases the country's commitment to international food standards. Progress in setting standards for spices and culinary herbs, along with achievements in the 46th Codex Alimentarius Commission meeting, such as Election to the Executive Committee and support for global millet standards, highlights India's leadership in setting international food standards. This engagement not only promotes food safety and quality enhancement but also facilitates international food trade alignment with World Trade Organization agreements, ensuring compliance for seamless trade in the food sector.

2.2. Strengthening the Indian Food Regulatory Ecosystem

The Food Safety and Standards Act (FSSA) of 2006 replaced the Prevention of Food Adulteration Act, establishing FSSAI as a single point of reference.

There has been Shift from 'checking adulteration' to 'ensuring safety,' promoting self-compliance for consumer protection and fair trade.

India has strengthened its regulatory framework by developing horizontal and vertical standards to support the food processing industry while ensuring compliance and implementation. Continuous review processes involve scientific panels and Standards Review groups to maintain regulatory efficacy. Key regulations encompass various aspects like licensing, food products standards, sales restrictions, packaging, contaminants, lab analysis, recalls, advertising, and claims, among others. Introduction of new regulations align with global standards like Codex, focusing on aspects such as front-of-pack labeling, menu labeling, and claims, following international best practices to ensure consumer safety.

Regulations like Advertising and Claims provide a framework for responsible industry practices, defining principles for claims and advertisements, nutrient content claims, health claims, and procedures for claim approvals, emphasizing consumer protection and industry accountability. Initiatives like 'Labelling and Display' aim to empower consumers with comprehensive nutritional information for informed choices. Standards for fortified foods combat nutrient deficiencies, encouraging production and consumption of fortified staples, with the introduction of the +F logo to aid consumer awareness.

Trade facilitation measures include regulations on food imports that streamline processes and reduce turnaround times at ports through risk-based sampling. FSSAI's advocacy for millets, highlighted during the International Year of Millets 2023, underscores the nutritional benefits and importance of millets in sustainable agriculture. Established standards ensure quality and safety of millet-based products, fostering consistency and consumer trust.

Additional regulations on surplus food recovery, safe diets for school children, infant nutrition, Ayurvedic foods, and vegan products further emphasize FSSAI's commitment to promoting food safety, balanced diets, and diverse dietary options in alignment with global best practices.

2.3. Support for Food Businesses

- Food Safety Mitra Scheme (2020): Launched to aid small and medium food businesses with trained professionals for licensing, registration, hygiene rating, and training, enhancing compliance and food safety practices.
- Online Training and Capacity Building: Introduced online modules for FBOs and safety officials to improve knowledge and compliance, particularly crucial during the COVID-19 pandemic.
- Instant Renewal of Licenses/Registrations: Tatkal renewal for one to five years validity and modification for non-high-risk food products, reducing bureaucratic hurdles for FBOs.

2.4. Research and Innovation

- Eat Right Research Awards and Grants (2023): Introduced to foster research in food safety and nutrition for evidence-based policy-making and innovative solutions.
- Sustainable Food Systems: Focus on sustainable practices like reducing food waste, promoting organic farming, and eco-friendly packaging for a resilient food system.
- Lab Testing Capabilities: Notified labs for testing fortificants in fortified rice and system-wide surveillance for safe and quality food products.
- PAN India Surveillance: Comprehensive surveillance plan to assess safety and quality of various food products nationwide to ensure consumer safety and quality.

2.5. Capacity Building initiatives

Capacity building initiatives in the food processing sector focus on workforce training to enhance public awareness and improve food safety practices. The Food Safety Training & Certification (FoSTaC) program offers 19 certification courses at different levels, including Basic, Advanced, and Awareness, along with a self-learning program for startups. This training aims to equip food handlers across the supply chain with essential knowledge on food safety practices during handling, production, processing, and utilization.

FSSAI mandates each Food Business Operator (FBO) to have a trained Food Safety Supervisor for every 25 food handling staff on their premises, with over 18 lakh supervisors trained so far. Key initiatives include guidelines and a portal for street food vendors to maintain hygiene, an action plan on Anti-Microbial Resistance, and a guidance document on artificial fruit ripening using ethylene gas.

To enhance the State Food Safety Index nationwide, FSSAI launched the "State Connect" initiative in collaboration with CII. This initiative aims to strengthen food safety management by

fostering cooperation between FSSAI, state governments, industry stakeholders, and consumers, ensuring a safe and healthy food environment for all.

2.6. Consumer Interest at Centre Stage

Consumer safety is a top priority for both regulatory bodies and the food industry, emphasizing a simplified and science-based regulatory approach for the benefit of consumers, industry, and regulators alike. The Food Safety and Standards Authority of India (FSSAI) has launched initiatives to foster a food safety culture across the country, touching every place where food is consumed or produced, including homes, schools, workplaces, restaurants, and street food vendors. The goal is to promote safe and healthy diets, empowering citizens to make informed food and dietary choices for improved health.

The Eat Right Movement is a significant initiative driving social and behavioral change by providing guidance and promoting behavioral shifts in various settings like homes, schools, workplaces, and eating establishments. As consumer demands evolve and regulatory landscapes change, the industry has voluntarily undertaken initiatives to reformulate packaged foods by reducing salt, sugar, and saturated fats levels, offering healthier options to consumers. This proactive industry transformation aligns with global trends towards healthier food choices and consumer well-being.

2.7. Regulatory framework around Plastics and Food Safety

The regulatory framework surrounding plastics and food safety in India is crucial due to the significant role packaging plays in preserving and protecting food throughout the supply chain. Innovations in packaging technology, such as monolayer packaging for recyclability, coated films for enhanced surface properties, and transparent barrier films replacing aluminum foil, have revolutionized the packaging industry. With the rise of E-commerce and online retail, there is a growing demand for protective packaging that can withstand logistical challenges during transit and storage.

The food packaging industry in India is the fifth largest sector, valued at around $40 billion and projected to reach over $65 billion by 2020. The Indian packaged food market, with a per capita consumption of 24kg per year, presents significant growth opportunities. Both flexible and rigid packaging are utilized in processed foods in India, with flexible packaging comprising monolayer or multilayer plastic films. Multi-layer laminated plastic sheets primarily use polymers like PE, PP, PET, and PVC, with polyethylene and polypropylene constituting approximately 62% of polymer usage in flexible packaging.

Major multinational and Indian food companies in India ensure full compliance with BIS standards and government regulations regarding packaging safety. The government has placed a specific focus on sanitation and waste management over the years, emphasizing the importance of safe and sustainable packaging practices in the food industry. Regulatory measures exist to ensure the safety of food products packed in polymers like PE, PP, PET, and PVC, underlining the government's commitment to food safety and quality standards in packaging materials.

2.8. Milestones achieved in recent years

Since 2019, the Food Safety and Standards Authority of India (FSSAI) has been actively driving initiatives to ensure food safety and quality across the country. Here are some key milestones achieved in the last 5 years:

These milestones reflect FSSAI's commitment to ensuring the highest standards of food safety and quality in India through a combination of regulatory frameworks, capacity building initiatives, and innovative programs.

Eat Right India Movement Expansion:

- Expansion of the Eat Right India movement with initiatives like Eat Right School and Eat Right Campus.
- Launch of the Eat Right Challenge in 2021 to enhance food safety, nutrition, and sustainability.
- Introduction of the Eat Right Research Awards and Grants to promote research in food safety and nutrition.
- Implementation of the State Connect initiative in 13 states to strengthen the food testing and regulatory ecosystem.

Improving Laboratory Infrastructure and Capacity:

- Regulations implemented in 2019 to enhance food testing reliability by recognizing competent laboratories.
- Establishment of new National Food Laboratories and upgrades to ensure better food quality assessment.
- Presence of 210 FSSAI recognized laboratories with NABL accreditation for food sample analysis.

Launch of FoSCoS (Food Safety Compliance System):

- Introduction of FoSCoS in Ju 2020 to simplify licensing, registration, and compliance processes for food businesses.
- Implementation of measures like instant modification for non-high-risk food products a Tatkal renewal of licenses/registrations.

Food Safety Mitra Scheme and Hygiene Rating Scheme:

- Launch of the Food Safety Mitra Scheme to support small and medium food businesses.
- Introduction of the Hygiene Rating Scheme to assess and rate food establishments on hygiene and safety practices.

Fortification of Rice:

- Mandating the fortification of rice with essential nutrients to combat nutritional deficiencies.
- Notification of 66 labs for testing of fortificants in fortified rice and related products.

Online Training Programs:

- Introduction of online training modules for food business operators (FBOs) and food safety officials to enhance their knowledge a compliance with food safet regulations.

Chapter 3

Technology and Innovation Driving Food Processing Industry

Technological innovations, evolving consumer demands, and a growing market landscape are driving growth in the food processing technology sector. Innovation in food processing has become increasingly crucial in ensuring the product quality and safety, extending shelf life as well as enhancing nutritional value of food products, increasing efficiency of the supply chain, helping meet regulatory standards as well as enhancing overall sustainability of our food supply chains

The commonly used food processing technology includes processes such as canning, freezing, drying, fermenting, and packaging, among others. Going forward enhanced usage of innovations like AI, automation, robotics, and data analytics are expected to revolutionize the food processing sector, making operations more precise and sustainable.

Some of the key areas of impact created by technology in the food processing sector include:

Enhancing Efficiency and Productivity

- Technology and innovation play a pivotal role in enhancing the efficiency and productivity of the food processing industry. For example, automation and robotics streamline production processes, reduce labour costs, and minimize human error, leading to higher throughput and consistent product quality.

Ensuring Food Safety and Quality

- Technology solutions are ensuring food safety and extending shelf life without compromising nutritional value. *For example, advanced technologies such as High-Pressure Processing (HPP), Pulsed Electric Fields (PEF), and Ultraviolet (UV) treatment help in inactivating pathogens and spoilage microorganism, thereby reducing the risk of foodborne illness and enhancing product quality.*

Reducing Environmental Impact

- Innovation in sustainable practices is also becoming crucial for reducing the environmental footprint of the food processing industry. Technologies that improve energy and water efficiency, reduce waste, and promote recycling and reuse are emerging as vital solutions for sustainable operations. *For instance, advanced water treatment systems enable the use of water in processing plants, and anaerobic digestion technologies convert organic waste into biogas for energy production.*

Meeting Consumer Demand

- Technologies advancements are also allowing the industry to respond quickly to changing consumer preferences and market trends. Innovation in product development, such as the creation of plant-based and alternative protein products, cater to the growing demand for healthy, sustainable, and ethical food choices. *For example, personalized nutrition solutions, enabled by data analytics and biotechnology, provide tailored dietary options to meet individual health needs.*

Enhancing Supply Chain Transparency

- Technologies such as blockchain and IoT are helping enhance supply chain transparency and traceability, ensuring the authenticity and safety of food products. These technologies provide real-time monitoring and recording of production, processing, and distribution activities, reducing the risk of frauds and contamination and building consumer trust.

Driving Economic Growth

- Technological innovations are also driving economic growth by creating new market opportunities, improving competitiveness and fostering industry development thus stimulating growth and job creation within the sector.

3.1. Overview of the Innovation Ecosystem in Food Processing Sector

3.1.1. *Startups*

India has seen a surge in the number of startups in the food processing sector, driven by innovation and entrepreneurship. There are ~3319 DPIIT recognised startups in the Food Processing Sector as on 10th April 2023 spread across 425 districts of the country and employing roughly 33,000 people. These startups are focusing on diverse areas such as food delivery, organic and health foods, plant-based proteins, sustainable packaging, and supply chain optimization.

3.1.2. *Incubators and Accelerators*

Apart from government schemes, stakeholders such as incubators and accelerators are supporting startups in the food processing industry. Swissnex India Accelerator, SAP-SINE Social (S-Cube) Accelerator Programme, Agri-Tech Startup Accelerator, CIE Hyderabad, and ICRISAT Food Processing Business Incubator/ Agribusiness Incubator (ABI) are some of the incubators and accelerators that support startups in the sector. Additionally, there are academic institutions such as IIT Madras' Rural Technology and Business Incubator (RTBI) and T-Hub Accelerator, which is supported by the Government of Telangana and three of India's premier academic institutes (IIIT- H, ISB & NALSAR).

3.1.3. *Private Investors*

Several food and agriculture value chain funds like the Startup India Seed Fund Scheme, Startup India Tax Exemption Benefits, Orkla Foods Fund, SEAF India Agribusiness International Fund, Rabo Equity Advisors, Omnivore Capital and Aspada Investments as well as few impact funds like Aavishkar, Villgro Innovations and Mentara are supporting the ecosystem.

3.1.4. Government

The Government has taken a host of initiatives to support Agri & Food Tech Startups and accelerate the use of technology and innovation in the agriculture and food sector. The government launched the **Startup India initiative** in 2016 to build a strong eco-system for nurturing innovation and startups in the country. The Program supports simplification of the procedures and handholding, funding support and tax incentives, industry academia partnership and incubation, credit guarantee fund for startups through Small Industries Development Bank of India (SIDBI) amongst others.

The Atal Innovation Mission (AIM) was launched to harness private sector expertise to set up incubators, organizing annual grand challenge for innovative solutions to problems faced by

industry and those posed by ministries as well as a grand challenge for incubators and establishment of tinkering labs.

In 2023, an agriculture accelerator fund to encourage AgriTech startups by young entrepreneurs in rural areas was announced in the budget speech. The Fund is aimed at bringing innovative and affordable solutions for challenges faced by farmers and will also bring in modern technologies to transform agricultural practices, increase productivity and profitability.

More recently, in Union Budget 2024-25 to bolster the Indian start-up eco-system, boost the entrepreneurial spirit and support innovation, the government proposes to abolish the so-called angel tax for all classes of investors. The initiative will help strengthen the startup ecosystem and provide them more financial base for innovation and technology development.

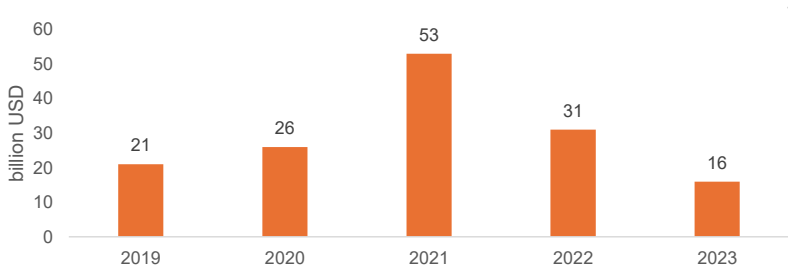
All these partners are driving the desired momentum for growth of the Agri & Food Tech Innovation Ecosystem.

3.2. Agri & Food Tech Investment trends

3.2.1. *Global Investment trends*

The food and agriculture technology market experienced a significant downturn in venture capital funding in 2023, with total funding dropping to 15.6 billion USD, a 49.2% decline compared to the previous year (**Figure 5**).

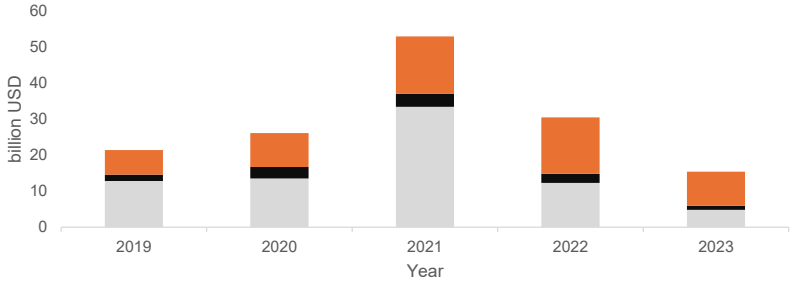
Figure 5: *Global Agrifood Tech Investment*



Source: AgFunder Global AgriFood Tech Investment Report 2024

A major decline of 55% was seen in **Mid-stream** tech and additionally the other categories that witnessed a decline included **Up-stream** - Novel farming systems -79%, Farm Management software, Sensing & IoT -58%, and Innovative Food -51% Down-stream- Cloud retail -75%, eGrocery -60%, Online Restaurants & Meal Marketplaces -58%, In-store Retail and Restaurant Tech -57% and Home & Cooking Tech -53% (**Figure 6**).

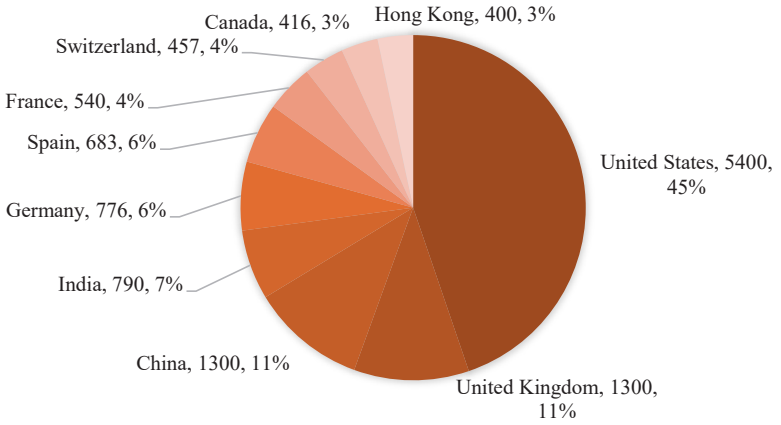
Figure 6: *Global AgriFood Tech Investment by Supply Chain Segment*



Source: AgFunder Global AgriFood Tech Investment Report 2024

A total of 11.9 billion USD raised globally in 2023. India ranks 4th in investment by geography globally of total 790 million USD, United States stands first of total 5.4 billion USD (**Figure 7**).

Figure 7: *AgriFood Tech Investment by geography in 2023 (million USD)*

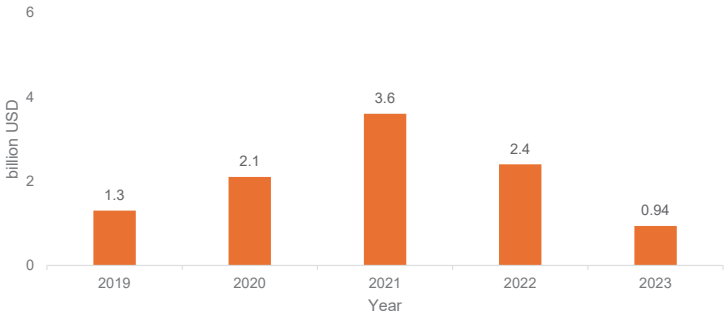


Source: AgFunder Global AgriFood Tech Investment Report 2024

3.2.2. *Investment trend in India*

Over the past five years, investment trends in the food tech industry have experienced fluctuations. The year 2021 saw the highest investment in India's food tech sector, while 2023 recorded the lowest. In 2023, the industry received 0.94 billion USD in investments (**Figure 8**). This growth is fueled by innovative startups, substantial government support, and strong interest from venture capitalists, indicating a broader move towards more efficient, sustainable, and technologically advanced food production and distribution systems.

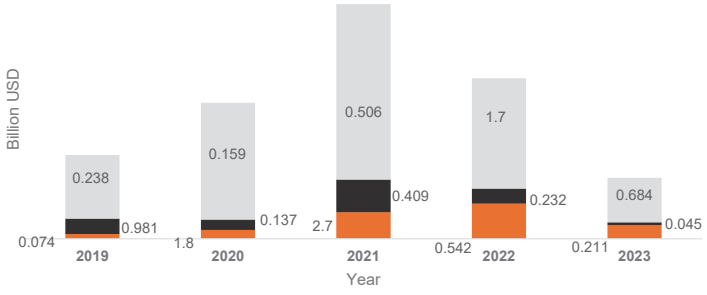
Figure 8: *Investment trends in the Indian AgriFood Tech Industry*



Source: India 2024 AgriFoodTech Investment Report, AgFunder

In the last 5 years, the downstream category, related to consumption and distribution, such as e-commerce, delivery, and restaurants, have garnered the highest investments in India (**Figure 9**).

Figure 9: *Funding by Supply Chain Segment*



Source: India 2024 AgriFoodTech Investment Report, AgFunder

The investment trend in India is therefore picking up in the mid and downstream categories which are largely related to off farm tech. In 2023, Indian agrifood tech startups raised 940 million USD across 129 deals. As in 2023, e-Grocery and Agribusiness Marketplaces were the most active categories, taking over 60% of all dollar funding.

3.3. Startups as a vehicle for technology deployment

Startups are also emerging as an efficient vehicle for technology deployment on ground and are deeply involved in the creation of digital and smart supply chains, value chain financing, business to business/consumer linkages, quality assurance systems, among others. There are startups that have created online mandis, so that players can directly quote requirements and source from other players with the requisite quantity and quality. Some startups have done digitization of entire FPOs so that produce can be traced back to individual farmers. Some startups tie up FPOs to traders, while others tie them up to kirana stores or to the Hotels/ Restaurants/ Cafes (HoReCa segment). Some startups offer intelligent vision, using which it is possible to segregate F&V produce or staples as per specifications of the buyer. Technology is being used to offer modular, energy-efficient storage systems at farmgate. Fintech products that allow warehousing to be layered with credit and insurance are getting created. Startups are also using combinations of sensors, IOT, blockchain and ML driven data systems to create end-to-end traceability within the food chains.

3.4. Emerging technology driven trends

3.4.1. *Green Food Processing*

Green food processing focuses on using renewable resources, reducing waste, and cutting down on energy use. Green techniques such as freeze-drying, high-temperature short-time (HTST) processing, decaffeination, aseptic packaging, and food irradiation are revolutionizing the industry. Innovations like edible coatings help extend the shelf life of produce that helps enhance food quality by avoiding harmful chemicals and preservatives and relying on natural processes. Consequently, the food maintains higher nutritional value, superior taste, and better texture.

3.4.2. *Plant-based Food and Alternative proteins*

Plant-based foods replicate the taste, texture, and nutritional profile of animal products but are entirely plant-derived. The food processing industry has seen advancements in techniques specifically for plant-based products, transforming ingredients like soy, peas, and legumes into meat-like textures, dairy substitutes, and even egg replacements. These plant-based foods typically use less water, land, and energy, leading to a smaller carbon footprint compared to traditional food production. This trend signifies a crucial move toward sustainable and mindful eating in contemporary cuisine.

3.4.3. *Traceability*

Smart labels and standalone food grading devices are now available, enabling consumers to make informed choices when purchasing food. Moreover, innovations in blockchain technology and real-time food monitoring through Internet of Things (IoT) devices allow food brands to provide full end-to-end traceability of their products. These innovations build trust between food producers and consumers, boosting brand credibility and sales.

3.4.4. *Food fortification*

Food fortification involves adding essential micronutrients to foods to combat deficiencies. Various technologies aid this process, such as premixing to ensure even nutrient distribution, extrusion for cereals, spray drying for powdered products, encapsulation that helps protect nutrients, especially in fats and oils, and emerging nanotechnology that offers potential for better nutrient absorption. Additionally, biofortification, though different, involves breeding crops with higher nutritional content. The chosen method depends on the type of food and the desired outcome, with quality control being crucial.

3.4.5. *Clean Labels*

Clean labels go beyond merely offering simplified ingredient lists. They encompass ethical sourcing, sustainability, and clear packaging practices. Products featuring clean labels utilize technologies and methods to guarantee an eco-friendly journey from production to consumption. Clean labels serve as trustworthy indicators, providing clarity about packaged food contents and empowering consumers with information.

3.5. High potential technology innovations

3.5.1. *High – Pressure Processing (HPP)*

HPP is an effective method for microbial inactivation, eliminating pathogens without exposing food to high temperatures. This technique extends the shelf life of products such as deli meats, juices, and ready-to-eat meals, while preserving their original taste and nutritional content, catering to consumer preferences for minimally processed foods. HPP is widely used in various sectors, including dairy, seafood, and meat processing. Overall, HPP is a pivotal technology that supports the production of safe, minimally processed, and high-quality food products, meeting the demands of modern consumers.

Case Study - High – Pressure Processing (HPP)

HPP has numerous applications in cheese production. It causes the disruption of casein micelles, denaturation of whey proteins, an increase in milk pH, and enhances cheese yield, while also reducing rennet coagulation time (RCT). These effects highlight HPP's potential as an alternative to traditional heat treatment of milk, which, although effective in killing harmful pathogens, renders the milk less suitable for cheese making due to increased RCT and delayed maturation. HPP has been shown to reduce RCT and improve cheese yield. Studies indicate a 15% increase in yield and a 30% decrease in whey proteins in the whey of cheese made from HP-treated milk, likely due to interactions between whey proteins and casein. [1]. HP-treated milk cheeses exhibit higher moisture, salt, and total free amino acid content compared to cheeses made from raw or pasteurized milk.

3.5.2. *Pulse Electric Field Technology (PEF)*

PEF technology is increasingly used in food processing to deactivate microorganisms and enzymes, thereby extending the shelf life of various products without relying on traditional heat treatments. This technology enhances the extraction of intracellular compounds, preserving the quality and nutritional value of liquid foods like juices and dairy. PEF is also employed in meat tenderization, improving quality without the need for extended marination or mechanical methods. Additionally, PEF aids in decontaminating food contact surfaces, boosting overall food safety.

3.5.3. *Cold Plasma Technology (CPT)*

CPT is gaining prominence in the food processing industry for its versatile applications in enhancing food safety and extending shelf life. In food processing, cold plasma is used for surface decontamination, effectively reducing microbial loads on fruits, vegetables, and other food products. CPT offers unique benefits, such as minimal impact on the sensory and nutritional properties of treated food products. This makes it particularly suitable for treating heat-sensitive foods like fruits and vegetables, ensuring product quality while meeting stringent safety standards. As research and development in this field continue, CPT holds promise for broader applications in the food industry, providing a sustainable and efficient method for enhancing food safety and quality.

Case Study – Cold Plasma Technology

In the meat processing industry, cold plasma is being applied to pork, beef and chicken to enhance the meat quality through microbial contamination and shelf-life extension. Studies have shown that cold plasma species effectively combat E. Coli, Salmonella, L. Monocytogenes, as well as yeast and mold species on meat species.[2] Cold plasma treatment also modifies the meat's functional properties by reducing water immobilization in the protein myofibrillar network. This technology has proven beneficial for surface decontamination of eggshell membranes, targeting S. enteritidis and S. typhimurium microorganisms. Additionally, atmospheric plasma jets have been tested on sliced ham and chicken meat surfaces, further demonstrating that cold plasma contributes to improved meat.

Case Study – Pulse electric Field (PEF)

In French fries and Chips production, PEF technology has become a global standard for pre-treatment before cutting, due to its numerous process and quality advantages. PEF softens the potato tissues by discharging cell fluid and reducing turgor pressure, effectively replacing the traditional pre-heater. This change reduces water and energy consumption by up to 90% and avoids heating the product. The actual PEF treatment takes only a few microseconds, with a total dwell time of just 5-8 seconds, depending on the line capacity. Further, PEF technology offers uniform treatment for all potatoes, regardless of size and this uniform softening leads to smoother cuts and more flexible raw sticks, reducing breakage and increasing yield. Additional quality benefits include about 10% lower oil absorption during deep-frying, more even borrowing, and longer French fries.

3.5.4. *3D Printing*

3D printing, or additive manufacturing is revolutionizing the food industry by enabling the creation of edible items layer by layer from digital models. This innovative technology allows for personalized and customized food production, giving flexibility to adjust texture, flavor, shape, and size to meet individual preferences. Furthermore, 3D printing promotes sustainability by using food wastes and byproducts, contributing to eco-friendly practices in the food sector.

Case Study - 3D Printing

Focusing on sustainability, researchers have developed biodegradable cups infused with energy drink ingredients, which only require the addition of water to prepare the drink. This concept can be extended to various other packaging types. This also indicates that additive manufacturing (AM) can facilitate the reuse of plastic waste and the incorporation of biopolymers in food packaging. Leading food companies are now exploring the potential of AM for developing smart and intelligent packaging prototypes.

The industry employs various 3D printing methods, each with unique features. Extrusion-based printing deposits semi-plastic materials layer by layer, offering design freedom and suitability for a wide range of food materials. Selective sintering uses lasers or hot air to fuse particles layer by layer, allowing for the incorporation of different components. Binder jetting selectively binds powdered materials layer by layer, while inkjet printing dispenses droplets for surface filling, making it ideal for low viscosity materials like chocolate.

3.5.5. *Advanced Robotics*

Advanced robotics has become integral to the food processing industry, revolutionizing various production stages with enhanced efficiency and precision. Automated robotic systems handle tasks such as picking, sorting, and packaging, optimizing speed and accuracy while reducing manual labor. In processing plants, robotic arms equipped with sensors and computer vision technology perform intricate tasks like cutting, slicing, and portioning, ensuring consistent quality and minimizing product waste. These robotic systems increase production rates and operational efficiency, streamlining processes in the fast-paced environment of food manufacturing. Additionally, advanced robotics plays a vital role in enhancing food safety and hygiene. Robots equipped with sensors and cameras conduct routine inspections for quality control, identifying and removing defective products from the production line. Autonomous robotic vehicles navigate within food processing facilities, transporting raw materials and finished products, thereby reducing the risk of contamination associated with human handling. Overall, the integration of advanced robotics in the food processing industry boosts productivity and quality while addressing key challenges related to labor shortages and stringent hygiene standards.

Case Study – Advanced Biotech

Dairy processing industry has increasingly adopted automation and robotics to boost efficiency, enhance product quality, and streamline production. Robots are now being used in various stages of cheese processing, such as curd stirring and cheese slicing, in addition to automated milking systems.

3.5.6. *Smart Logistics and Cold Chain Management*

Smart logistics and cold chain management play a crucial role in tackling the global issue of food wastage. This innovative approach uses disposable, recyclable contactless smart tags attached to products, enabling suppliers to monitor temperature fluctuations during transportation. Real-time data uploads allow for the quick identification of points where temperature changes occurred. Automated alerts guide receiving staff to focus on products needing review, rather than performing random quality checks. In addition to reducing consumer waste, cold chain management technology enhances food safety by providing accurate predictions of shelf life.

Case Study – Smart logistics

The use of RFID technology in cold chain logistics management is enhancing the safety and traceability of transported goods. By integrating temperature sensors with electronic labels, companies are monitoring temperatures consistently, ensuring an unbroken cold chain, maintaining food quality traceability, and improving food safety. Combining RFID with other logistics technologies like GPS, GIS, EDI, and WMS significantly elevates the management of food cold chain logistics, driving transformative changes in the cold and fresh food industry.

3.6. *Way forward*

To keep up with the rate at which the agriculture and food processing sector is evolving globally, the focus needs to be on increasingly adjusting to continuing innovations and developments and India is faring well in this direction. With the focus of government on promoting innovation the sector is growing fast. Further the thrust on digitalization is expected to open new opportunities for the country's enterprises and individuals, as well as the global community at large. India has enormous potential for investment and growth in the Agrifood Tech sector, including agritech start-ups, digital infrastructure assistance, and cutting-edge technology.

Chapter 4
State Profiles

4.1. Tamil Nadu

4.1.1. *State Overview*

Tamil Nadu, a state in India covering an area of 1.3 lakh sq. km, is home to approximately 72 million people according to the 2011 census. Strategically located on the southeastern coast of India, it boasts of a rich cultural heritage and serves as a major economic hub. The state capital is Chennai, renowned for its industrial prowess and strategic position facilitating trade with ASEAN countries. Tamil Nadu's Gross State Value Added (GSVA) stands at Rs. 24731.82 billion (Current Prices), with agriculture, forestry, and fishing contributing Rs.3096.67 billion (2023-24), representing 12.5% of the GSVA (MoSPI, 2024). With an Ease of Doing Business rank of 14 in 2019, Tamil Nadu offers a favourable environment for investment and business growth (PIB, 2020).

4.1.2. *Agricultural Scenario*

Tamil Nadu's agriculture thrives under its tropical/subtropical climate influenced by both southwest and northeast monsoons, which shape its agricultural diversity across 7 distinct agro-climatic zones. From 2013-14 to 2023-24, agriculture and allied sector grew at an average annual growth rate of 5.3% (constant prices),with livestock sectors leading at 9.2%, followed by fishing and aquaculture at 3.7 % . In 2023-24, within the agriculture GSVA (current prices), crops contributed 44%, livestock 45%, forestry and logging 3%, and fishing and aquaculture 8% (MoSPI, 2024).

Food Grains, Non-Food Grains & Horticulture

Tamil Nadu's agriculture sector stands out for its robust production of both food and non-food crops. When it comes to foodgrains, the state performs admirably in 2021-22. It ranks 7th nationally in rice production, yielding 7.9 million metric tonnes annually, making up 6% of India's total rice output. Rice cultivation here ensures food security and supports local consumption as well as export markets. Additionally, Tamil Nadu ranks 10th in pulses production with 0.5 million metric tonnes and 6th in coarse cereals with 3.6 million metric tonnes. In non-foodgrains, it ranks 9th in oilseed production, yielding 1.1 million metric tonnes yearly, contributing 3% to the national total. Oilseeds are vital for producing edible oils and complement the state's agro-industrial sector. Additionally, Tamil Nadu is a significant producer of sugarcane, ranking 5th nationally with 16.2 million metric tonnes. Sugarcane farming supports the sugar industry and various agro-processing activities, creating jobs and economic opportunities in the state (RBI Handbook of Statistics 2023). Horticulture in Tamil Nadu is robust, with the state ranking 7th nationally in production in 2023-24. It excels in fruits (6th) with 7.52 million metric tonnes and vegetables (8th) with 9.16 million metric tonnes annually. Plantation crops, including tea and coffee, contribute significantly, ranking 2nd nationally with 4.11 million metric tonnes. Despite smaller scales, spices and honey production further diversify the state's agricultural output (MoAFW,2024).

Figure 10: *Food grains, non-food grains and horticulture production statistics in Tamil Nadu*

Category	National Rank	Item	Production (MMT)	National Share
Food Grains	7	Rice	7.9	6%
	10	Pulses	0.5	2%
	6	Coarse Cereals	3.6	7%
	11	Total Food Grains	12.0	4%
Non-food Grains	9	Oil Seed	1.1	3%
	5	Sugarcane	16.2	4%
Horticulture	6	Fruits	7.5	7%
	8	Vegetables	9.2	5%
	2	Plantation	4.1	22%
	12	Spices	0.2	2%
	11	Honey	0.002	2%
	7	**Horticulture**	**21.9**	**6%**

Source: RBI Handbook of Statistics on Indian States,2023, MoAFW,2024

Tamil Nadu leads nationally in tapioca, clove, curry leaf and tamarind, and have substantial production in banana, watermelon, foot yam, coconut production.

Figure 11: *Top Agricultural Products of Tamil Nadu*

Category	National Rank	Item	Production	National Share (%)
Fruit*	3	Banana	4.7	13%
	5	Mango	0.9	4%
	3	Watermelon	0.6	15%
	5	Guava	0.4	7%
	8	Papaya Production	0.2	4%
	13	Total Citrus	0.2	1%
	3	Aonla	0.2	16%
	9	Jack Fruit	0.2	5%
	5	Sapota	0.1	8%
	4	Grapes	0.1	1%
Vegetables*	1	Tapioca	3.6	57%
	8	Tomato	1.2	6%
	11	Onion	0.4	2%
	5	Chillies (Green)	0.4	9%
	9	Cabbage	0.342	3%
	3	Foot Yam	0.1	15%
Plantation Crops*	2	Coconut	4.0	26%
	4	Cashewnut	0.1	10%
	5	Betelvine	0.02	3%
	10	Arecanut	0.02	1%
	4	Cocoa	0.003	10%
Spices**	1	Clove	1.1	67%
	1	Curry Leaf	36.67	62%
	1	Tamarind	42.67	28%
	3	Turmeric	111.7	11%
	4	Vanilla	0.003	4%

* Million Metric Tonnes, **Thousand Metric Tonnes

Source: MoAFW,2024

4.1.3. *Livestock and Fisheries Sector*

In Tamil Nadu, the livestock sector plays a pivotal role in the state's agriculture. In 2022-23 it ranks 11th in milk production, with a production of 1.03 million metric tonnes. It is also the second-largest egg producer in India with 21.56 billion eggs produced in (2022-23). The state ranks

6th in meat production, with a production of 0.704 million metric tonnes in (2022-23). Tamil Nadu excels in poultry meat production, ranking 5th nationally with 0.5 million metric tonnes. It also holds significant positions in other meat categories: 2nd in cattle meat, 4th in sheep meat, 9th in goat meat, and 15th in buffalo meat production nationally (BAHS,2023). The state excels in both inland and marine fisheries, contributing significantly to the national seafood production. In 2022-23 Tamil Nadu ranked 12th nationally in inland fish production, harvesting 0.2 million metric tonnes annually, and 5th in marine fish production with an output of 0.59 million metric tonnes. Overall, the state produces 0.82 million metric tonnes of fish, underscoring its importance in meeting local demand and supporting livelihoods in coastal communities (Handbook of Fisheries Statistics,2023).

Figure 12: *Livestock, Poultry and Fisheries Production Statistics in Tamil Nadu*

Category	National Rank	Item	Production (Million Tonnes)	National Share
Livestock & Poultry	2	Egg	21.56 Billion No	16%
	11	Milk	1.0	5%
	6	Meat	0.70	7%
	2	Cattle Meat	0.05	23%
	15	Buffalo Meat	0.003	0.2%
	4	Sheep Meat	0.1	7%
	9	Goat Meat	0.1	5%
	5	Poultry	0.50	10%
Fisheries	12	Inland Fish	0.23	2%
	5	Marine	0.60	13%
	9	Total Fish	0.8	5%

Source: BAHS,2023, Handbook of Fisheries Statistics 2023

4.1.4. *Infrastructure*

Connectivity

Tamil Nadu's road, railway and port infrastructure, that supports efficient connectivity, are crucial for its prominence in India's food processing sector. The state's road network spans 271,137 kilometres, including 7,000 kilometres of National Highways, facilitating seamless transportation of goods and people. Complementing this, Tamil Nadu have 4,033 kilometres of railway lines and hosts 4 international airports, including major hubs like Chennai and Coimbatore, alongside 3 domestic airports. It has 3 major ports such as Chennai Port and 15 minor ports, enhancing maritime trade and logistics across the region.

Table 4: Road, Railways, Airport & Port Infrastructure Mapping in Tamil Nadu

Connectivity	*Details*
Roads	National Highways (NH): 7,000 kms (2023)
	Total Road Length: 271,137 kms (2019)
Railways	Railway Lines: 4,033 kms
Airports	International Airports: 4 (including Chennai and Coimbatore)
	Domestic Airports: 3
Ports	Major Ports: 3 (including Chennai Port, Ennore Port, and Kamarajar Port)
	Minor Ports: 15
Connectivity	Details
Roads	National Highways (NH): 7,000 kms (2023)
	Total Road Length: 271,137 kms (2019)
Railways	Railway Lines: 4,033 kms
Airports	International Airports: 4 (including Chennai and Coimbatore)
	Domestic Airports: 3
Ports	Major Ports: 3 (including Chennai Port, Ennore Port, and Kamarajar Port)
	Minor Ports: 15

Source: RBI Handbook of Statistics on Indian States,2023, Airport Authority of India, Tamil Nadu Govt. Portal

Processing Infrastructure

In terms of food processing, Tamil Nadu hosts a diverse array of facilities that contribute significantly to various commodity groups. The state is home to 5,031 registered food and beverage factories and most of the factories are operational. These factories cover essential sectors including meat, fish & seafood, fruits & vegetables, oils, dairy, grain mills, and beverages (**Table 4**). Supporting these manufacturing hubs are 36 production clusters, 10 Mega Food Parks, and 11 Agriculture Produce Clusters (APCs), which streamline production and distribution processes. Furthermore, the presence of 1,032 warehouses and 16 Cold Chains ensures adequate storage and logistics management, crucial for maintaining product quality and supply chain efficiency (**Table 5**).

Table 5: Sector wise Food Processing Units in Tamil Nadu

Sector	*Number of Factories*	*Factories in Operation*	*% Operational*	*% Share of sector*
Meat	13	13	100%	8%
Fish & Seafood	69	69	100%	11%
Fruit & Vegetables	172	154	90%	14%
Oils	255	184	72%	8%
Dairy	351	336	96%	18%
Grain Mills	2146	1759	82%	11%
Other Food Products	1618	1332	82%	14%
Animal Feeds	141	140	99%	13%
Beverages	266	212	80%	11%
Total	5031	4199	83%	-

Source: ASI,2023

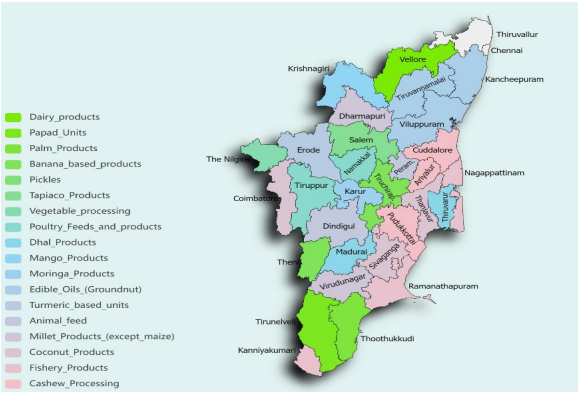
Table 6: Food Processing Infrastructure Mapping in Tamil Nadu

Food Processing Infrastructure Type	*Number*
ODOP Production Clusters	36
Mega Food Parks	10
Warehouses	1032
Agriculture Produce Clusters	11
Cold Chains	16

Source: Nivesh Bandhu Portal

The One District One Product (ODOP) clusters across Tamil Nadu (36) focuses on key products—such as cashew processing in Ariyalur, coconut products in Coimbatore, and fishery products in multiple districts—leading to concentrated expertise and improved efficiency. This targeted approach boosts local production capabilities, fosters innovation, and strengthens supply chains, ultimately supplement to the food processing industry.

Figure 13: *ODOP Production Cluster Mapping in Tamil Nad*



4.1.5. *Policy*

Tamil Nadu Single Window System

Tamil Nadu Single Window Portal is a one-stop portal for investors to electronically secure all business-related approvals/ licenses/ clearances/ NOCs in a time-bound, transparent and hassle-free manner. The Tamil Nadu Single Window Portal covers 200+ services encompassing 40+ Government departments/ agencies with an aim to improve Ease of Doing Business (EoDB) for investors in Tamil Nadu, and make the G2B interface faceless, paperless and contactless

Special incentives for sunrise sectors, encompassing industries such as agriculture and food processing, are designed to foster growth and innovation in Tamil Nadu. These incentives include:

Table 7: Policy Incentives for Food Processing Sector in Tamil Nadu

Incentive Description	*Details*
Investment Promotion Subsidy	Additional capital subsidy of up to 7.5% of EFA for Sunrise Booster Projects.
Land Cost Subsidy	Concessional land rates in designated districts and subsidies on private land.
Stamp Duty Incentive	100% exemption on stamp duty for industrial land from SIPCOT; concession for private lands.
Enhanced Incentive for Quality Certification	Subsidy up to 50% of certification cost, capped at Rs. 1 cr.
Enhanced Incentive for Intellectual Property	Reimbursement of 50% of expenditure on IP creation, capped at Rs. 1 cr.
Interest Subvention	5% interest subvention on term loans, varying limits based on project category.
Standard Incentives	Includes electricity tax exemption for 5 years and green industry incentives up to Rs. 1 cr.
SGST Refund on Capital Goods	Eligibility for SGST refund on capital goods.

Source: Tamil Nadu Industrial Policy 2021

4.1.6. *Current Export Scenario*

In the year 2023-24, Tamil Nadu's total agricultural exports amounted to 1,647.99 million USD, representing 6.4 % of India's total agricultural exports valued at 25,600.24 million USD.

The topmost exported commodities by value from Tamil Nadu includes Poultry Products, Non-Basmati Rice, Processed Fruits, Juices and Nuts, Groundnuts, and Cucumber and Gherkins (prepared & preserved). These five commodities collectively accounted for 54% of Tamil Nadu's total agricultural and allied sector exports, valued at 896 million USD in 2023-24.

Besides agriculture, Tamil Nadu significantly contributes nearly one-fifth of India's marine exports. In 2023-24 marine products worth1488.28 million USD were exported through the ports of Tamil Nadu (MPEDA, 2024).

Within the processed food sector, the major commodities exported by Tamil Nadu in 2023-24 were Processed Fruits, Juices, and Nuts, Cucumber and Gherkins, Jaggery and Confectionery, Processed Vegetables, and Cereal Preparations. Collectively, these commodities constituted 29% of Tamil Nadu's total agricultural exports, valued at 475.96 million USD.

Export Performance of agricultural and processed commodities

Agriculture products

Groundnuts are a significant oilseed crop in Tamil Nadu, especially in terms of exports. Tamil Nadu contributed 15% to the total groundnut exports of India in TE2023-24 by value. Apart from raw edible peanuts, India is also exporting Blanched Peanuts, Roasted Salted Peanuts and Dry Roasted Peanuts and a variety of peanut-based products. Key export destinations for groundnuts from India in 2023-24 included Indonesia, Vietnam, Philippines, Malaysia, and Thailand.

Non-basmati rice exports from the state of Tamil Nadu have experienced significant growth in terms of value at an Average Annual Growth Rate (AAGR) of 22% from 2013-14 to 2023-24. Tamil Nadu's contribution from non-basmati rice exports amounted to 219.8 million USD in 2023-24, constituting a 5% share of India's total non-basmati exports by value and 19% of Tamil Nadu's total agricultural exports as per triennium average of 2023-24. In 2023-24, the major export destinations for India's non-basmati rice included Benin, Guinea, Togo, Cote D'Ivoire, and Vietnam.

Table 8: Top five exports of agriculture and processed commodities in TE2023-24 by Tamil Nadu in terms of value (US million)

Products	*Tamil Nadu*		*India*		*Share of Tamil Nadu in India's export of the commodity (TE2023-24) by Value*	*Share of the product in Tamil Nadu's overall agriculture exports TE2023-24 by Value.*
	Value (USD million)	QTY (1000 MT)	Value (USD million)	QTY (1000 MT)	in %	in %
Groundnuts	230.36	177.33	773.86	62124.93	30%	15%
Processed fruits, juices & nuts	155.95	139.39	586.45	41722.81	27%	10%
Non -basmati rice	291.52	731.28	5683.3	1538829	5%	19%
Cucumber and gherkins (prepd. & presvd)	91.12	88.63	224.92	22982.13	41%	6%
Poultry products	64.14	529.24	129.88	75340.96	49%	4%

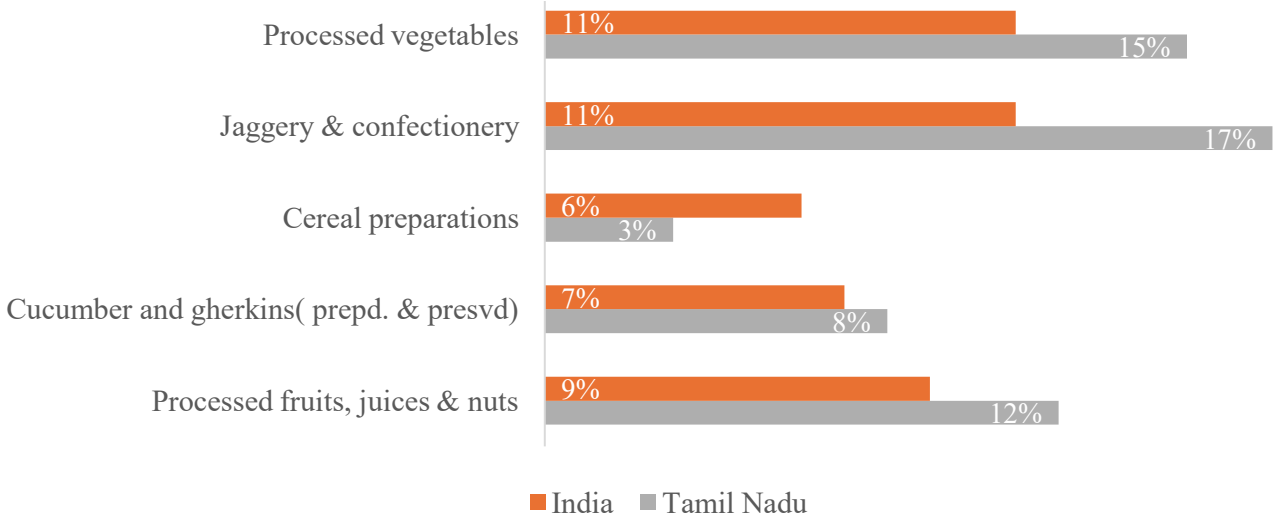
* Overall agricultural export share of Tamil Nadu is based on the use of APEDA listed products.

Source: APEDA, July 2024

Processed foods

The export performance of processed fruits, juices, and nuts, cucumber and gherkins, and processed vegetables from Tamil Nadu has been commendable, exhibiting impressive Average Annual Growth Rates (AAGR) in terms value from 2013-14 to 2023-24.

Figure 14: *AAGR by Value (million USD) of Major processed Food products during 2013-14 to 2023-24*



Source: APEDA, July 2024

Specifically, in the category of processed fruits, juices and nuts, processed vegetables, jaggery and confectionery as well as cucumber and gherkins, Tamil Nadu has outperformed the overall growth rates observed at the national level.

Table 9: Export of major processed agriculture products by Tamil Nadu in TE2023-24

Product	*Tamil Nadu*		*India*		*Share of Tamil Nadu at National level*	
	QTY (1000 MT)	Value (USD million)	QTY (1000 MT)	Value (USD million)	By QTY	By Value
Processed fruits, juices & nuts	139.39	155.95	41720	586.46	33%	27%
Cucumber and gherkins (prepd. & presvd)	88.63	91.12	22980	224.93	39%	41%
Cereal preparations	18.39	45.62	47670	748.72	4%	6%
Jaggery & confectionery	66.07	43.25	61000	447.69	11%	10%
Processed vegetables	15.8	24.6	46950	647.45	3%	4%
Marine Exports	256.02	1704.34	1628.72	7745.26	16%	22%

Source: APEDA. July'2024.

Noteworthy is Tamil Nadu's dominance in the export of processed fruits, juices, and nuts, accounting for a substantial 33% share of India's total exports by quantity and 27% by value in this category in TE 2023-24. The state exported a significant volume of 208. 37 thousand MT valued at 220.81 million USD in the year 2023-24.

Furthermore, Tamil Nadu's export of cucumber and gherkins, amounting to 8860 (thousand MT) in TE2023-24, represents 39% of India's total exports in this segment 2298 (thousand MT). Key export destinations for India's processed cucumber and gherkins include the U.S.A., Germany, France, Spain, and Russia. Similarly, the export of Processed vegetables from Tamil Nadu has shown a notable AAGR of 15% over the same period.

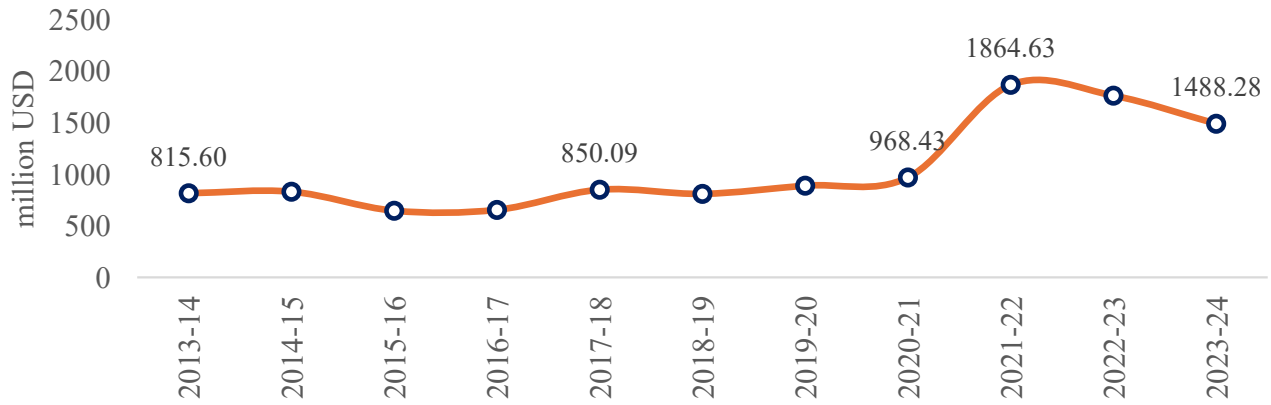
Poultry products

The exports of poultry products from Tamil Nadu have been growing at 12% of AAGR from 2013-14 to 2023-24. In 2023-24, Tamil Nadu achieved a significant milestone by exporting a significant volume of 833.8 million metric tons of poultry products valued at 184.58 million USD. The primary poultry products exported include eggs, egg yolks, meat, and edible offals of birds. Key export destinations for Indian poultry products are Oman, Indonesia, Maldives, Qatar, United Arab Emirates, and Sri Lanka.

Marine Products

Exports of marine products from Tamil Nadu have shown steady growth with an Average Annual Growth Rate (AAGR) of 10% by value from 2013-14 to 2023-24.

Figure 15:*Trends in export of marine products in Tamil Nadu – 2013-14 to 2023-24*



Source: MPEDA July 2024

In the year 2023-24, Tamil Nadu exported 258,542 metric tons of marine products valued at 1,488.28 million USD. Tamil Nadu's contribution to India's total marine exports accounted for 16% by volume and 22% by value in the year TE2023-24, underscoring the state's significance in the marine export sector. The steady growth rates in both volume and value highlight Tamil Nadu's.

4.2. Andhra Pradesh

4.2.1. *State Overview*

Andhra Pradesh, spanning 160,205 sq. km, is home to approximately 84.58 million people according to the 2011 census. Situated strategically on India's southeastern coast, it serves as a vital gateway to East and Southeast Asia. The state capital is Amaravati. Andhra Pradesh's Gross State Value Added (GSVA) totals ₹ 13291.23 billion (Current Prices), with agriculture, forestry, and fishing contributing ₹4,538.07 billion. in the fiscal year 2023-24, making up 34% of the GSVA (MoSPI,2024). Ranking first in Ease of Doing Business in 2019, Andhra Pradesh offers a conducive environment for investment and business expansion (PIB,2020).

4.2.2. *Agriculture Scenario*

In terms of agriculture, Andhra Pradesh is divided into 5 distinct agro-climatic zones, benefiting from a 980km coastline. From 2014-15 to 2023-24, Agriculture and allied sector sectors grew at an

average annual growth rate of (constant prices) 7.3 %, with Fishing and Aquaculture leading at 16.9 %, followed by livestock sectors at 8.0 %. In 2023-24, within the agriculture GSVA (current prices), crops contributed 40%, livestock 36%, forestry and logging 2%, and fishing and aquaculture 22% (MoSPI, 2024).

Food Grains, Non-Food Grains & Horticulture

Andhra Pradesh's agriculture sector diversified its production of both food and non-food crops. In 2021-22, It ranks 8th nationally in rice production, yielding 7.76 million metric tonnes annually, making up 6% of India's total rice output. Additionally, Andhra Pradesh ranks 7th in pulses production with 1.05 million metric tonnes and 10th in coarse cereals with 11.07million metric tonnes. In non-foodgrains, it ranks 11th in oilseed production, yielding 0.54 million metric tonnes yearly. Additionally, Tamil Nadu is a significant producer of sugarcane, ranking 10th nationally with 3.6million metric tonnes (RBI Handbook of Statistics on Indian States,2023). Andhra Pradesh excels in horticulture, where it ranks 4th nationally with a total production of 28.407 million metric tonnes. The state tops in fruits production (1st) with an impressive yield of 17.79 million metric tonnes. Additionally, Andhra Pradesh stands out in vegetables with a production of 7.55 million metric tonnes, securing the 9th rank nationally. It also excels in spices, ranking 2nd with a production of 1.54 million metric tonnes, contributing significantly to the state's agricultural diversity and economic growth (MoAFW,2024).

Figure 16: *Food grains, non-food grains and horticulture production statistics In Andhra Pradesh*

Category	National Rank	Item	Production (MMT)	National Share
Food Grains	8	Rice	7.8	6%
	7	Pulses	1.1	4%
	10	Coarse Cereals	2.3	4%
	12	Total Foodgrains	11.1	4%
Non-food Grains	11	Oil Seeds	0.54	1%
	10	Sugarcane	3.6	1%
Horticulture	1	Fruits	17.8	16%
	9	Vegetables	7.6	4%
	4	Plantation	1.4	7%
	2	Spices	1.5	13%
	14	Honey	0.002	7%
	4	Horticulture	28.4	8%

Source: RBI Handbook of Statistics on Indian States,2023, MoAFW,2024

Andhra Pradesh is a leading producer of several agricultural products, topping national charts in banana, mango, and citrus fruits. It excels in vegetables like tomato and okra, and is a significant producer of plantation crops, notably cocoa and cashew nut. The state also dominates in spices, especially dried red chillies and curry leaf.

Figure 17: *Top Agricultural Products of Andhra Pradesh*

Category	National Rank	Item	Production (MMT)	National Share (%)
Fruit	1	Banana	5.8	16%
	2	Mango	5.0	22%
	3	Total Citrus	3.2	22%
	4	Papaya Production	0.9	17%
	5	Watermelon	0.6	18%
	6	Guava	0.5	9%
	7	Other Fruits	0.4	16%
	8	Muskmelon	0.4	24%
	9	Sapota	0.3	29%
	10	Pomegranate	0.3	9%
Vegetables	2	Tomato	2.4	11%
	5	Okra/Ladyfinger	0.7	10%
	10	Onion	0.5	2%
	4	Chillies	0.5	10%
	12	Brinjal	0.25	2%
	4	Foot Yam	0.1	11%
Plantation Crops	4	Coconut	1.2	8%
	2	Cashewnut	0.1	17%
	4	Betelvine	0.02	3%
	8	Arecanut	0.02	2%
	1	Cocoa	0.012	41%
Spices	1	Red Chillies (Dried)	1.4	50%
	2	Curry Leaf	0.02	30%
	4	Tamarind	0.02	13%
	3	Vanilla	0.0	12%
	4	Ajwan	0.002	7%

Source: MoAFW 2024

4.2.3. *Livestock and Fisheries Sector*

In Andhra Pradesh, the livestock sector is pivotal to the state's agricultural economy, boasting significant national rankings. It ranks 5th in milk production in 2022-23 producing 15.44 million metric tonnes. Additionally, it leads the nation in egg production with an impressive output of 27.84 billion eggs, and ranks 4th in meat production, yielding 1.09 million metric tonnes annually. The state excels in various meat categories - 4th in buffalo meat production with 0.14 million metric tonnes, 2nd in sheep meat with 0.292 million metric tonnes, 10th in goat meat with 0.070 million metric tonnes, and 4th in poultry production with 0.59 million metric tonnes. These sectors play crucial roles in sustaining both local consumption and contributing to national agricultural output (BAHS,2023). In 2022-23, Andhra Pradesh leads in fisheries production, ranking 1st nationally in inland fish with 4.5 million metric tonnes and 1st in total fish production with 5.1 million metric tonnes annually. It also ranks 4th in marine fish production with 0.6 million metric tonnes. These figures underscore the state's significant role in contributing to India's fishery sector, supporting both domestic consumption and export markets (Handbook of Fisheries Statistics 2023).

Figure 18:*Livestock, Poultry and Fisheries Production Statistics in Andhra Pradesh*

Category	National Rank	Item	Production	National Share
Livestock & Poultry	1	Egg	27.84 Billion No	20%
	5	Milk	15.4	7%
	4	Meat	1.09	11%
	4	Buffalo Meat	0.14	8%
	2	Sheep Meat	0.29	28%
	10	Goat Meat	0.1	5%
	4	Poultry	0.6	12%
	1	Inland	4.51	34%
Fisheries	4	Marine	0.60	14%
	1	Total Fish	5.10	29%

Source: BAHS,2023, Handbook of Fisheries Statistics 2023

4.2.4. *Infrastructure*

Connectivity

Andhra Pradesh's infrastructure supports efficient connectivity crucial for its prominence in India's food processing sector. The state's road network spans 176351 kilometres, facilitating seamless transportation of goods and people. Complementing this, Andhra Pradesh boasts 7,714 kilometres of railway lines and hosts 6 operational airports, its port infrastructure is impressive, with 1 major port such as Visakhapatnam and 10 minor ports and 4 captive port, enhancing maritime trade and logistics across the region.

Table 10: Road, Railways, Airport & Port Infrastructure Mapping in Andhra Pradesh

Connectivity	*Details*
Roads	National Highways (NH): km (2023)
	Total Road Length: 176351 km (2019)
Railways	Railway Lines: 7,714 km
Airports	International Airports: 2 (Tirupati & Vijayawada)
Ports	Major Ports: 1 (Visakhapatnam)
	Minor Ports: 10
	Captive Ports: 4

Processing Infrastructure

In terms of food processing, Andhra Pradesh hosts a diverse array of facilities that contribute significantly to various commodity groups. The state is home to 5,566 registered food and beverage factories, with a substantial majority operational. These factories cover essential sectors including meat, fish & seafood, fruits & vegetables, oils, dairy, grain mills, and beverages. Supporting these manufacturing hubs are 13 production clusters, 3 Mega Food Parks, and 2 Agriculture Produce Clusters (APCs), which streamline production and distribution processes. Furthermore, the presence of 69 warehouses and 28 cold chains ensures adequate storage and logistics management, crucial for maintaining product quality and supply chain efficiency.

Table 11:Sector wise Food Processing Units in Andhra Pradesh

Commodity Group	*Number of Factories*	*Factories in Operation*	*% Operational*	*% Share of sector*
Meat	7	7	100%	4%
Fish & Seafood	148	130	88%	20%
Fruit & Vegetables	165	118	72%	10%
Oils	318	228	72%	10%
Dairy	399	271	68%	14%
Grain Mills	3193	2281	71%	14%
Other Food Products	975	732	75%	8%
Animal Feeds	144	126	88%	12%
Beverages	217	145	67%	8%
Total	5566	4038	73%	-

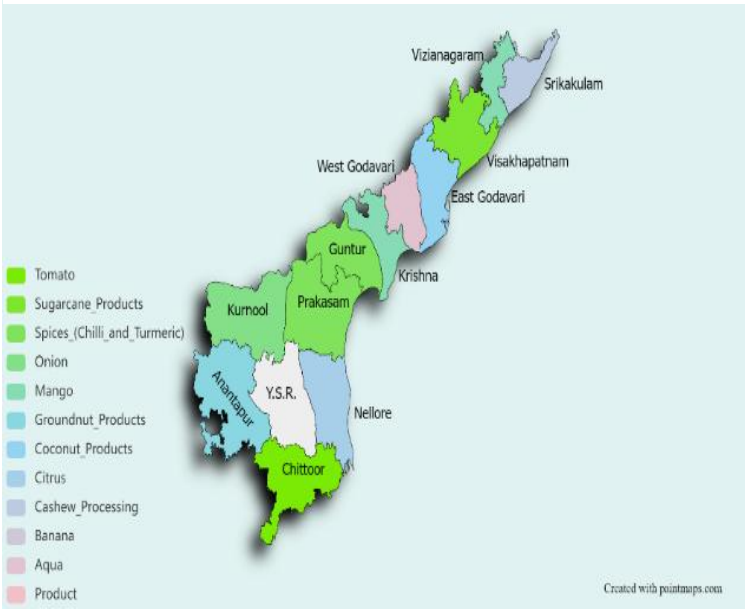
Source: ASI 2023

Table 12:Food Processing Infrastructure Mapping in Andhra Pradesh

Food Processing Infrastructure Type	*Number*
Production Clusters	13
Mega Food Parks	3
Warehouses	69
Agriculture Produce Clusters	2
Cold Chains	28

Source: Nivesh Bandhu Portal

Andhra Pradesh's ODOP clusters highlight regional specialties, with Ananthapur focusing on groundnut products and Chittoor on tomatoes. Key districts include Guntur and Prakasam for spices, Kadapa for bananas, and Krishna for mangoes. East Godavari excels in coconut products, while Vishakhapatnam specializes in sugarcane. The clusters enhance regional strengths and streamline production. These production clusters support local supply chains, while clusters in sugarcane and aqua sectors drive value-added processing, strengthening the state's food processing industry.



Source: Nivesh Bandhu Portal

4.2.5. *Policy*

Single Window Systems

Among the many initiatives undertaken as part of facilitating industry set-up in the State, AP government has launched the Single Desk Portal (SDP) in June 2015. The one-stop-shop is helping industries to obtain more than 39 regulatory clearances required to set-up and operate business in 21 days. The SDP supports end-to-end transaction processing with online payment and application status tracking. As of October 2017, investors can obtain clearances belonging to 19 departments covering Pre-establishment approvals, pre-operation approvals and renewals. Since launch in June 2015, more than 23,100 industry applications were cleared through the Single Desk Portal.

Industrial Land Bank

Total available industrial land bank-50,573 acres. All available land parcels can be viewed by investors on APIIC GIS portal. Enterprises are provided with CETP, STP, WTP and other Common infrastructure.

- Total Live Water capacity at FRL- 169.2 BCM (excluding Srisailam & Nagarjuna Sagar Reservoirs)
- High quality and reliable power supply 24*7
- State is promoting Renewable energy through dedicated body (NREDCAP).

Policy Incentives

Table 14: Policy Incentives for Food Processing Sector in Andhra Pradesh

Policy Incentives	*Description*
Name of Policy	Andhra Pradesh Food Processing Policy (2020 – 2025)
Nodal Agency	Andhra Pradesh Food Processing Society (APFPS)
Single Window Clearance System	The Single Desk Portal has been integrated with online applications of APIIC, Factories, Fire, etc. This will enable information sharing and minimize the duplicity of information shared by investors. https://www.apindustries.gov.in/APIndus/Default.aspx
Power/Electricity Subsidy	Micro and small enterprise: @Rs. 1 per unit for 5 years
	Farmer Producers Organizations: @ Rs 1.25 per unit for 5 years
	BC / Minority communities: @ Rs. 1.25 per unit for 5 years
	SC / ST entrepreneurs: @ Rs. 1.50 per unit for 5 years
Capital Subsidy	Micro and small enterprise: 15% up to Rs. 20 lakhs
	Farmer Producers Organizations: 35% up to Rs. 50 lakhs
	BC / Minority communities: 35% up to Rs. 50 lakhs
	SC/ST Entrepreneurs:45% limited to Rs. 1.00 Crore for Women and Men
	25% Land Conversion Charges up to Rs. 10 lakhs for MSES, FPOs, BC / Minority Communities (Women) and SC/ST Entrepreneurs
	50% rebate in land cost up to Rs. 20 lakhs for FPOS, BC / Minority Communities (Women) and SC/ST Entrepreneurs
Interest Subsidy	Micro and Small Enterprises: 3% for 5 years
	Farmers Producers Organizations (FPOs): 3% for 5 years

Policy Incentives	*Description*
	BC/ Minority Communities (Women): 3% for 5 years SC/ST
	Entrepreneurs: Up to 9% over and above 3% for 5 years
VAT/CST/SGST/TAX Exemption/Reimbursement	100% Reimbursement of stamp duty and transfer duty for purchase of land for MSES, FPOs, BC / Minority Communities (Women) and SC/ST Entrepreneurs
	SGST Reimbursement
	Micro and Small Enterprises: Reimbursement of 100% net SGST for 5 years
	FPOs, BC/ Minority Communities (Women) and SC/ST Entrepreneurs: Micro and Small enterprises - 100%
	Medium enterprises, Large and mega industries
	SGST reimbursement rates in Andhra Pradesh: <1000 jobs - 50%, 1000 to 2000 jobs - 75%, 2000+ jobs - 100%.
	FPOs, BC/Minorities(Women), SC/ST entrepreneurs
	Large enterprises-50%
	Medium enterprises-75%
Employment Generation	Medium enterprises, Large and mega industries
	SGST reimbursement in Andhra Pradesh varies: <1000 jobs - 50%, 1000 to 2000 jobs - 75%, 2000+ jobs - 100%.
Freight/Transport Subsidy	Not Applicable
Others	Quality Certification / Patent Registration- SC/ST Entrepreneurs: 100% of cost incurred limited to Rs. 3 lakhs
	Seed capital assistance- SC/ST Entrepreneurs:25% of machinery cost for micro units
	Other Common Initiatives - 16.2% of plots for SC Entrepreneurs 6% of plots for ST Entrepreneurs in industrial parks
	Development of food processing clusters Grant-in-aid @ 35% of eligible project cost up to Rs.10.00 cr
	Formalization of micro food processing units
	@35% of the eligible project cost with a maximum ceiling of Rs.10.0 lakh per unit to Individual micro food processing units as credit-linked capital subsidy.
	Brand Building & Marketing support @50% upto Rs. 10.00 Lakhs
	Support for common infrastructure@35% upto Rs. 10.00 Lakhs
	Seed capital assistance @ Rs.40,000 per SHG member for working capital. @35% of the eligible project cost with a maximum ceiling of Rs.10.0 lakh for FPOS.

Source: Nivesh Bandhu Portal

4.2.6. *Export Current Scenario*

In 2023-24, Andhra Pradesh contributed 16% to India's exports in terms of volume and 8% in terms of value. The total agricultural exports from Andhra Pradesh for the same period amounted to 2,093.42 million USD, with a volume of 5,111.89 thousand metric tons.

The major exports from Andhra Pradesh include non-basmati rice, maize, cashew kernels, prepared animal food, and buffalo meat. These five commodities collectively accounted for 98% of Andhra Pradesh's total exports in both value and volume terms in 2023-24.

Within Agri-Food processing fruits juice and nuts, cashew Kernels, animal feeder, processed fruits juice and nuts, jaggery and confectionery are major exported commodities. These commodities taken together constituted 4% total export value of Andhra Pradesh's Agriculture Exports in 2023-24.

Export Performance of agricultural and processed commodities

Agricultural Products

Andhra Pradesh, known as the rice bowl of India, significantly contributes to the India's non-Basmati rice exports. In the year 2023-24, it constituted 40% of India's non-Basmati rice exports by volume and 39% by value.

Table 15: Top five exports of agriculture and processed commodities in TE2023-24 by Andhra Pradesh in terms of value (US million)

Products	*Andhra Pradesh*		*India*		*Andhra Pradesh's Contribution to National-Level Exports of the Commodity*	
	Value (USD million)	Quantity (1000, MT)	Value (USD million)	Quantity (1000, MT)	Quantity	Value
Non-Basmati Rice	2139.2	6028.8	5683.4	15388.3	39%	38%
Maize	206.5	735.2	860.2	2862.3	26%	24%
Buffalo Meat	39.5	14.7	3412.9	1215.6	1%	1%
Prepared Animal Feeder	28.2	1.2	297.6	522.2	0%	9%
Cashew Kernels	38.9	5.8	382.7	66.9	9%	10%

Source: APEDA, July'2024

Andhra Pradesh's exports of Buffalo Meat have seen a significant growth rate of 67% Average Annual Growth Rate (AAGR) from 2013-14 to 2023-24. Buffalo meat constituted 3% of Andhra Pradesh's total agricultural exports by value. The exported products include Boneless Meat, livers, and other cut parts of Bovine Animals in frozen and fresh form, as well as edible offals. Major export destinations for Buffalo Meat from India include Malaysia, Vietnam, Egypt, Iraq, and the UAE.

In 2023-24, Andhra Pradesh's maize exports have shown significant growth with an Average Annual Growth Rate (AAGR) of 28% from 2013-14 to 2023-24. Andhra Pradesh contributed 26% by volume and 24% by value to the national exports of maize in TE2023-24. In 2023-24, Andhra Pradesh exported 139.23 million metric tonnes of maize. Major export destinations for India's maize include Bangladesh, Vietnam, Nepal, Malaysia, and Sri Lanka.

Processed foods

Cashew kernels are derived through the processing of raw Cashew nuts, involving steps like roasting, steaming, shelling, and peeling. Cashew Kernels export from Andhra Pradesh contributes to over 10% of India's total Cashew Kernels exports by value and 9% by volume. These kernels are exported in various forms such as roasted, salted, flavoured, and coated with spices, honey, etc. Additionally, value-added products like cashew powder, cashew butter, cashew drink, etc., also form part of cashew kernel exports. Major export destinations for Cashew Kernels from India include the United Arab Emirates, Japan, the Netherlands, Spain, and Saudi Arabia.

India is one of the major exporters of Prepared feeder to the world and has exported feeder worth 447.40 million USD during the year 2023-24. To this Andhra Pradesh has significant contribution, and the state exported 1727.54 metric tons of animal feeder valued at 45.19 million USD, representing 10% of India's total animal feeder export value for the year. The exported animal feeder products include majorly Bran Sharps and Other Residues of Wheat and Legumes Plants, Maize Bran, Compounded Animal Feed, etc. The major export destinations for India's animal feeder in 2023-24 included Bangladesh, Vietnam, Nepal, Norway, and Chile.

Andhra Pradesh has exhibited notable advancement throughout the past decade in terms of processed food exports, particularly in the export of processed fruits, juices, nuts, and vegetables.

Table 16: Export of major processed agriculture products by Andhra Pradesh in TE2023-24

Products	*Andhra Pradesh Exports in TE2023-24 (1000 MT)*	*All India exports in TE2023-24 (1000 MT)*	*Average Annual growth rate (2013-14 to 2023-24)*
Processed fruits, juices & nuts	2.3	417.2	NA
Prepared animal feeder	1.2	522.2	14%
Cashew kernels	5.8	66.9	-5%
Jaggery & confectionery	18.7	610.0	13%
Marine Products	28.0	2.2	8%

Source: APEDA July 2024

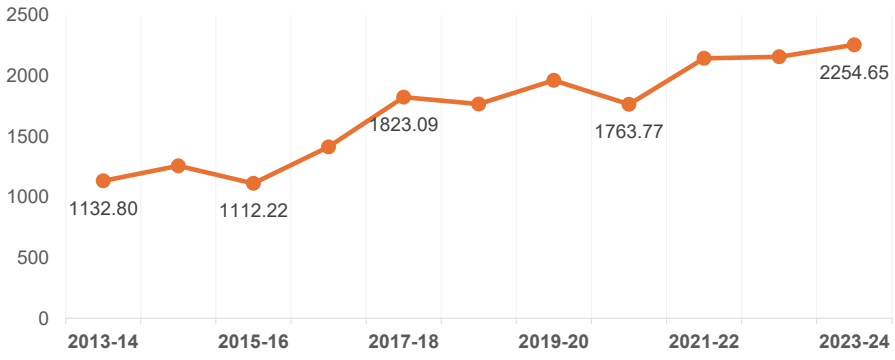
In the year 2023-24, the state exported 1284.12 metric tonnes of processed fruits, juices, and nuts, demonstrating. Major export destinations for processed Indian fruits, juices, and nuts include the U.S.A, Netherlands, Saudi Arabia, United Arab Emirates, and Russia Apart from fruits juices and nuts Andhra Pradesh exported processed vegetables 357.15 metric tonnes in 2023-24.

The state exported 4182 metric tonnes MT of Jaggery and confectionery in 2023-24. Major destinations for Indian jaggery and confectionary has been Indonesia, USA, Kenya, UAE and Nepal.

Marine Products Exports

The export performance of marine products from Andhra Pradesh has demonstrated significant growth trends over the period spanning from 2013-14 to 2023-24. Notably, exports from the state recorded an impressive 13% Annual Average Growth Rate (AAGR) by volume and 8% by value during this timeframe.

Figure 19: *Marine Products Exports from Andhra Pradesh (USD Million)*



Source: MPEDA July 2024

In the year 2023-24, India's total marine product exports amounted to 1,781,602 metric tonnes by volume and 7,381.89 million USD by value. Among these exports, Andhra Pradesh made a substantial contribution, exporting 322.48 thousand metric tonnes valued at 2,254 million USD. This

accounted for 18% of the share by volume and 31% of the share by value in that year at the national level, highlighting Andhra Pradesh's significant presence in the marine products export sector.

4.3. Karnataka

4.3.1. State Overview

Karnataka, India's eighth-largest state covering approximately 1,91,791 sq. km, occupies 5.35% of the nation's total geographical area. According to the 2011 Census, Karnataka has a population of 6.11 crores and is in the southern part of India. Bengaluru serves as its state capital. Karnataka's Gross State Value Added (GSVA) at current prices amounts to Rs. 22972.96 billion, with the agriculture, forestry, and fishing sectors contributing Rs. 2995.54 billion in 2023-24, constituting 13% of the GSVA.

4.3.2. *Agricultural Scenario*

Karnataka is distinguished by its ten distinct agro-climatic zones, which consider factors such as rainfall, soil types, elevation, and major crops grown. The state features a coastline of approximately 320 Km along the Dakshina Kannada, Udupi, and Uttara Kannada districts, bordered by the Arabian Sea to the west and the picturesque Western Ghats to the east. Over the past decade, the agriculture sector has experienced an annual average growth rate of 5.5% in constant prices. Within this sector, livestock has grown significantly faster than crops (3.5%) and fisheries (10.1%), with an average annual growth rate of 10.9%. In 2023-24, crops contributed 63%, livestock 28%, forestry and logging 5.5%, and fishing and aquaculture 3.7% to the agriculture Gross State Value Added (GSVA), underscoring their critical importance to the state's economy (MoSPI,2024).

Food Grains, Non-Food Grains & Horticulture

In Karnataka, agriculture production ranks prominently: rice 13th nationally at 4.32 million metric tonnes (3%), pulses 6th at 1.971 million metric tonnes (7%), and coarse cereals 1st at 7.274 million metric tonnes (14%). In non-food grains, Karnataka ranks 8th in oilseeds at 1.120 million metric tonnes (3%) and 3rd in sugarcane with 61.15 million metric tonnes (14%), highlighting its significant contributions to India's agricultural sector. Karnataka leads in plantation crops with 6.24 million metric tonnes, contributing 34% to the country's output. Fruits follow with 7.477 million metric tonnes (7%), while vegetables yield 6.38 million metric tonnes (3%). Spices contribute 0.74 million metric tonnes (6%), and Honey production also plays a role with 0.002 million metric tonnes. These sectors collectively highlight Karnataka's significant contributions to India's horticulture landscape.

Figure 20: *Food grains, non-food grains and horticulture production statistics in Karnataka*

Category	National Rank	Item	Production (MMT)	National Share
Food Grains	13	Rice	4.3	3%
	6	Pulses	2.0	7%
	1	Coarse Cereals	7.3	14%
	10	Total Foodgrains	13.8	4%
Non-food Grains	8	Oil Seeds	1.12	3%
	3	Sugarcane	61.2	14%
Horticulture	7	Fruits	7.5	7%
	12	Vegetables	6.4	3%
	1	Plantation	6.2	34%
	6	Spices	0.7	6%
	12	Honey	0.002	2%
	9	Horticulture	21.4	6%

Source: RBI Handbook of Statistics on Indian States 2023, MoAFW 2024

Karnataka stands out in agriculture with top national rankings in several categories. It leads in coconut and arecanut production and is a major producer of grapes and black pepper. The state excels in vegetables, especially tomato and onion, and has significant outputs in chillies. Karnataka is also notable for its contributions to spices, including vanilla, tamarind, and turmeric.

Figure 21: *Top Agricultural Products in Karnataka*

Category	National Rank	Item	Production	National Share
Livestock & Poultry	5	Egg	900.87 Billion No	7%
	8	Milk	12.83	6%
	9	Meat	0.43	4%
	13	Buffalo Meat	0.01	0.3%
	3	Sheep Meat	0.15	14%
	4	Goat Meat	0.10	7%
	9	Poultry	0.18	4%
Fisheries	7	Inland	0.50	4%
	1	Marine	0.73	16%
	3	Total Fish	1.23	7%

Source: MoAFW 2024

4.3.3. *Livestock and Fisheries Sector*

In Karnataka, the livestock sector plays a significant role in the state's agricultural output. It ranks 8th nationally in milk production, producing 12.8 million metric tonnes with a 5.6% share. Egg production stands 5th at 900.87 billion units (7%), while meat production ranks 9th with 0.433 million metric tonnes (4%). Within the meat category, Karnataka ranks prominently: 13th in buffalo meat production with 0.005 million metric tonnes (0.3%), 3rd in sheep meat with 0.145 million metric tonnes (14%), 4th in goat meat with 95,000 Metric Tonnes (7%), and 9th in poultry with 0.179 million Metric Tonnes (4%). In Karnataka, the fisheries sector demonstrates notable contributions to both inland and marine fish production. The state ranks 7th nationally in inland fish production, yielding 0.495 million metric tonnes (4%), and leads in marine fish production, ranking 1st with 0.73 million Metric Tonnes (16%). Overall, Karnataka ranks 3rd in total fish production at 1.23 million Metric Tonnes (7%), highlighting its significant role in India's fisheries industry.

Figure 22: *Livestock, Poultry and Fisheries Production Statistics in Karnataka*

Connectivity	Details
Roads	National Highways (NH): 8037 kms (2023)
	Total Road Length:358300 kms (2019)
Railways	Railway Lines: 3,596 kms
Airports	International Airports: 2 (including Bengaluru and Mangluru)
	Domestic Airports: 5
Ports	Minor Ports: 13

Source: BAHS,2023, Handbook of Fisheries Statistics 2023

4.3.4. *Infrastructure*

Connectivity

Karnataka's infrastructure network supports robust connectivity and economic activity with 8,037 Km of National Highways (2023) and a total road length of 358,300 Km (2019). The state features 3,596 Km of railway lines, 2 international airports (including Bengaluru and Mangaluru), 5 domestic airports, and 13 minor ports, enhancing transportation efficiency and facilitating trade across the region.

Table 17: Road, Railways, Airport & Port Infrastructure Mapping in Karnataka

Connectivity	*Details*
Roads	National Highways (NH): 8037 kms (2023)
	Total Road Length:358300 kms (2019)
Railways	Railway Lines: 3,596 kms
Airports	International Airports: 2 (including Bengaluru and Mangluru)
	Domestic Airports: 5
Ports	Minor Ports: 13

Processing Infrastructure

Karnataka's food processing sector benefits from extensive infrastructure including 30 production clusters, 2 mega food parks, 29 warehouses, 4 agriculture production clusters, and 16 cold chains. This network supports by efficient operational processing unit across diverse segments: meat (13), fish & seafood (51), fruits & vegetables (86), oils (115), dairy (107), grain mills (703), beverages (105), animal feeds (87), and other food products (738). These facilities contribute significantly to Karnataka's position in India's food processing industry, enhancing operational efficiency and sectoral competitiveness.

Table 18:Sector wise Food Processing Units in Karnataka

Commodity Group	*Number of Factories*	*Factories in Operation*	*% Operational*	*% Share of sector in India*
Meat	14	13	93%	8%
Fish & Seafood	51	51	100%	8%
Fruit & Vegetables	110	86	78%	8%
Oils	130	115	88%	5%
Dairy	124	107	86%	6%
Grain Mills	795	703	88%	4%
Other Food Products	933	738	79%	8%
Animal Feeds	92	87	95%	8%
Beverages	130	105	81%	5%
Total	2379	2005	84%	-

Source: ASI 2023

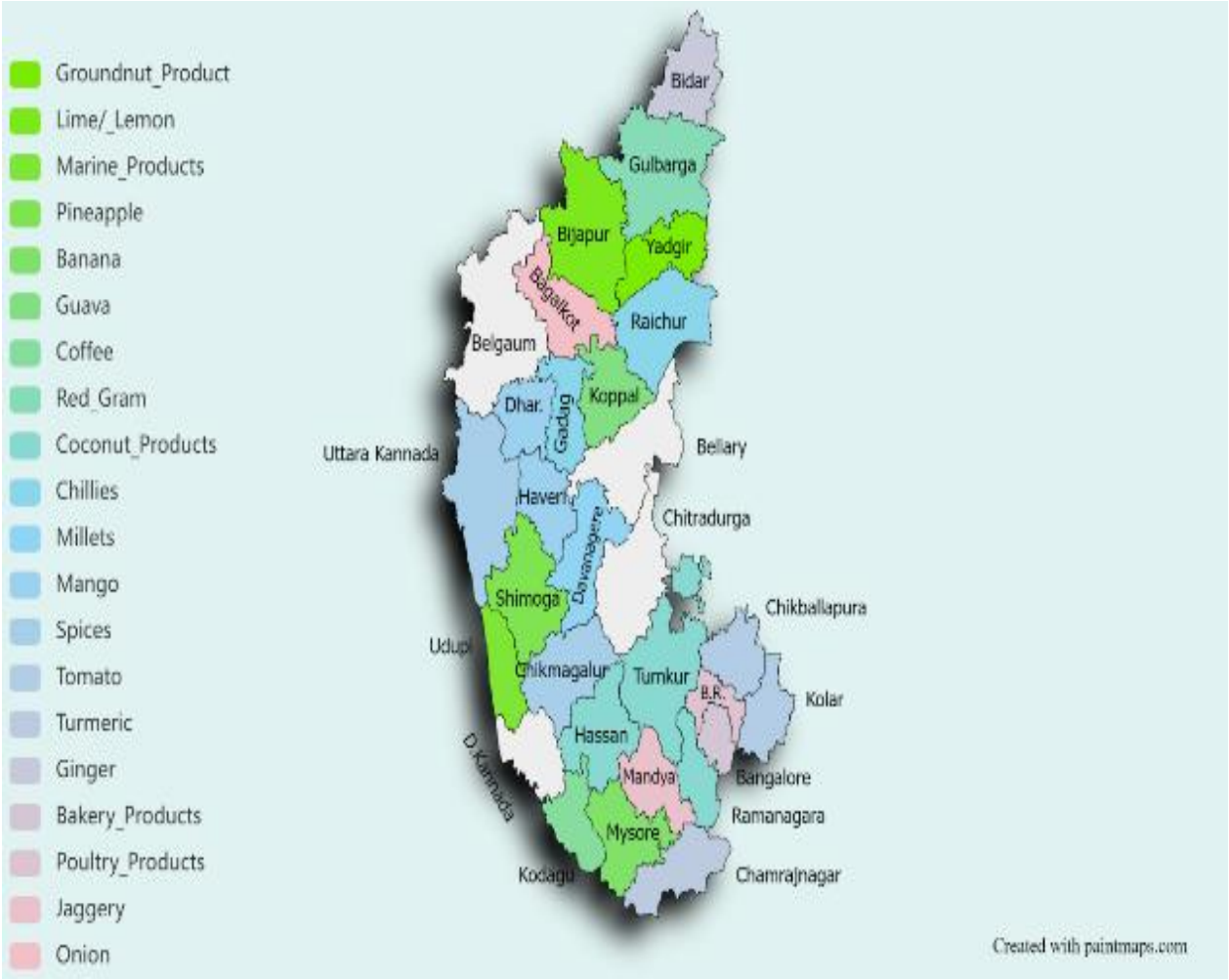
Table 19: Food Processing Infrastructure Mapping in Karnataka

Food Processing Infrastructure Type	*Number*
Production Clusters	30
Mega Food Parks	2
Warehouses	29
Agriculture Produce Clusters	4
Cold Chains	16

Source: Nivesh Bandhu Portal

Karnataka's ODOP clusters enhance the food processing sector by focusing on key regional products: onions in Bagalkote, jaggery in Belagavi, and figs in Bellary. The state excels in various sectors, including poultry in Bengaluru Rural, bakery products in Bengaluru Urban, and spices across several districts. Emphasizing products like ginger, turmeric, and marine products, Karnataka supports diverse and efficient food processing capabilities.

Figure 23:*ODOP Production Cluster Mapping in Karnataka*



Source: Nivesh Bandhu Portal

4.3.5. *Policy*

Single Window System

eBiz is a Single Window System under India's National E-Governance Plan, aimed at streamlining industrial project approvals. In Karnataka, this system allows for online application filing, processing, and status verification, and includes third-party verification of certificates. The state, a pioneer with the Industries Facilitation Act of 2002 and the Sakala Act of 2011, offers over 80 industry-related services with fixed timelines. The system supports online registrations and approvals, fully computerized property registration, and online payments, with digitally signed and verifiable certificates.

KIADB – As a Premier Industrial Land Provider

Karnataka Industrial Areas Development Board (KIADB) is a statutory body, constituted under sec.5 of Karnataka Industrial Areas Development Act (KIAD Act)-1966 vide order No. Cl 67 GMI 66 dated 20th June 1966 to promote rapid and orderly establishment and development of industries and for providing industrial infrastructural facilities and other amenities in Industrial areas in Karnataka. KIAD Act-1966, a special Act, provides for expeditious acquisition of lands for industrial and infrastructure purposes.

KIADB functions as per statutory provisions, Rules and Regulations enacted under the KIAD Act. The Board comprises of senior Government Officers in their ex-officio capacities. The Board members meet regularly to take decisions and monitor the functions. The vision of KIADB and world class infrastructure has made investors all over the world take notice of Karnataka as the premier destination for their startups and ventures.

Karnataka Starup Policy

Beyond Bengaluru Startups, incubated in GoK supported incubators and CIFs with a maximum annual turnover of INR 1 Crore shall be eligible for 100% reimbursement of annual State GST (SGST), within first three years of being incubated.

Policy and incentives

Table 20: Policy Incentives for Food Processing Sector in Karnataka

Policy & Incentives	*Description*
Name of Policy	Industrial Policy 2020-25
Nodal Agency	Commerce and Industries Department
Single Window Clearance System	The existing single window clearance system shall continue to clear the projects for agribusiness & food processing sector also. https://ebiz.karnataka.gov.in/kum/index.aspx
Capital Subsidy	Kindly refer to the attached document for more details
Interest Subsidy	For MSMEs
	Zone 1 : 5% for 6 years
	Zone 2 : 5% for 5 years
	Zone 3 : 5% for 5 years

Policy & Incentives	*Description*
	For Large/mega/ultra-mega/super-mega enterprises
	To encourage investments in taluks where there are no industries with investments above INR 100 Cr and direct employment of 75 persons. Investment Subsidy of INR 10.00 Cr in Zone 1 and INR 7.00 crore in Zone 2.
VAT/CST/SGST/TAX Exemption/Reimbursement	For MSMEs
	Stamp duty exemption
	Zone 1: 100%; Zone 2: 100%; Zone 3: NIL
	Land conversion fee
	Zone 1: 100%; Zone 2: 100%; Zone 3: NIL
	For Large/mega/ultra-mega/super-mega enterprises
	Stamp duty exemption
	Zone 1: 100%; Zone 2: 75%; Zone 3: Nil
	Land conversion fee
	Zone 1: 100%; Zone 2: 100%; Zone 3: NIL
Employment Generation	Not Applicable
Freight/Transport Subsidy	Not Applicable
Others	For MSMEs
	Investment promotion subsidy
	Micro Enterprises
	Zone 1: 30% of Vale of Fixed Assets (VFA) (max of INR. 25 lakh); Zone 2 : 25% of VFA (max of INR. 20 lakh); Zone 3: NIL
	Small Enterprises
	Zone 1: 25% of VFA (max of INR. 100 lakh); Zone 2: 20% of VFA (max of INR. 90 lakh); Zone 3: NIL
	Technology Adoption
	25% of cost (max. INR 50,000/-) for adopting technology from recognized national laboratories.
	Technology Business Incubation Centre
	25% of the cost of incubation centre (max. INR 50.00 lakh) (Minimum 1 TBIC in Zone 1)
	Technology Business Incubation Centre
	ISO Series Certification: 75% of cost (max. INR 75,000/-)
	BIS Certification: 50% of fees payable to BIS for certification (max. INR 20,000/-) & 25% of cost (max. INR 50,000/-) for purchase of testing equipment as approved by BIS.

4.3.6. *Current Export Scenario*

In 2023-24, Karnataka exported 294.25 thousand metric tons of Agriculture and allied sector products, contributing to 2% of India's total export value for Agriculture and allied sector in that year.

The major exported commodities from Karnataka include Cereal preparations, Cocoa products, Cucumber and Gherkins, Jaggery & confectionery, Processed Vegetables, Processed Fruits, Juices & Nuts, and Prepared animal feeder. In 2023-24, these seven commodities collectively constituted 65% of Karnataka's total agriculture and allied sector exports by quantity and 53% by value.

Table 21: Top exports of agriculture and processed commodities in TE2023-24 by Karnataka in terms of value (US million)

Product	*Karnataka*		*India*		*Share of Karnataka in India's Exports (TE2023-24)*	*Export Share of the product in Karnataka's total Agriculture and allied sector exports (TE2023-24)*
	QTY (MT)	Value (USD million)	QTY (MT)	Value (USD million)	By value	By Qty
Cucumber and gherkins (prepd. & presvd)	114803.0	108.6	229821.3	224.9	48%	41%
Processed vegetables	17754.7	28.2	469531.0	647.5	4%	7%
Poultry products	43624.9	28.4	753409.6	129.9	22%	7%
Cereal preparations	11783.9	23.6	476680.7	748.7	3%	5%
Prepared animal feeder	8624.9	12.4	522161.0	297.6	4%	5%
Processed fruits, juices & nuts	11645.6	17.2	417228.1	586.5	3%	3%
Jaggery & confectionery	18728.8	11.4	610034.4	447.7	3%	1%
Cocoa products	1448.1	3.3	32585.0	163.9	2%	41%

Source: APEDA July 2024

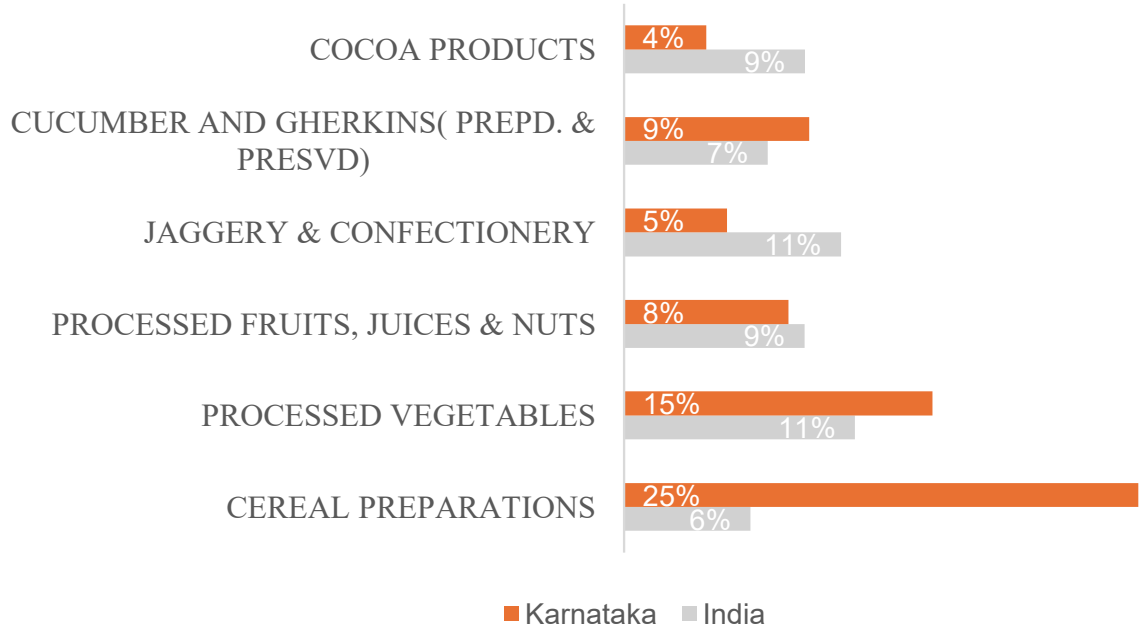
Karnataka's poultry export contribution accounts for 4% of India's total poultry exports by volume and 17% by value. Additionally, the marine export contribution from Karnataka represents 14% of India's total marine exports by volume and 7% by value.

Export Performance of agricultural and processed commodities

Agriculture products

The food processing sector in Karnataka has seen growth in exports over the past decade, with cucumber and gherkins, processed vegetables, cereal preparations, and animal feeder being the major exported commodities.

Notably, the annual average growth rates of exports of cereal preparations, cucumber and gherkins, and processed vegetables from Karnataka have exceeded the growth rates observed at the national level during this period.



Source: APEDA July 2024

Processed foods

Cucumber and Gherkins play a significant role in Karnataka's food processing industry. In TE2023-24, Karnataka's share in India's total exports of Cucumber and Gherkins was 50% by volume and 48% by value, with the state exporting 120.3 thousand metric tons worth 121.77 million USD in the year 2023-24. This accounted for 27% of the total export value of the state's agriculture and allied sectors for that year.

Karnataka's exports of cereal preparations experienced a notable Average Annual Growth Rate (AAGR) of 6% from 2013-14 to 2023-24. In 2023-24, the state exported cereal preparations totalling 13.79 thousand metric tons valued at 28.9 million USD. The major destinations for cereal preparation exports include the U.S.A, United Arab Emirates, Nepal, the U.K, Bangladesh, and Canada.

Karnataka contributed around 4% to India's total processed vegetables exports both in volume and value in TE2023-24, exporting 20,878.7 metric tons valued at 34.09 million USD in year 2023-24. This constituted 8% of the export value of Karnataka's total Agriculture and allied sector for that year. The AAGR for processed vegetables exports from Karnataka during the period of 2013-14 to 2023-24 was 15%. Major products exported under this category include potato, garlic, mushrooms, and peas, among others.

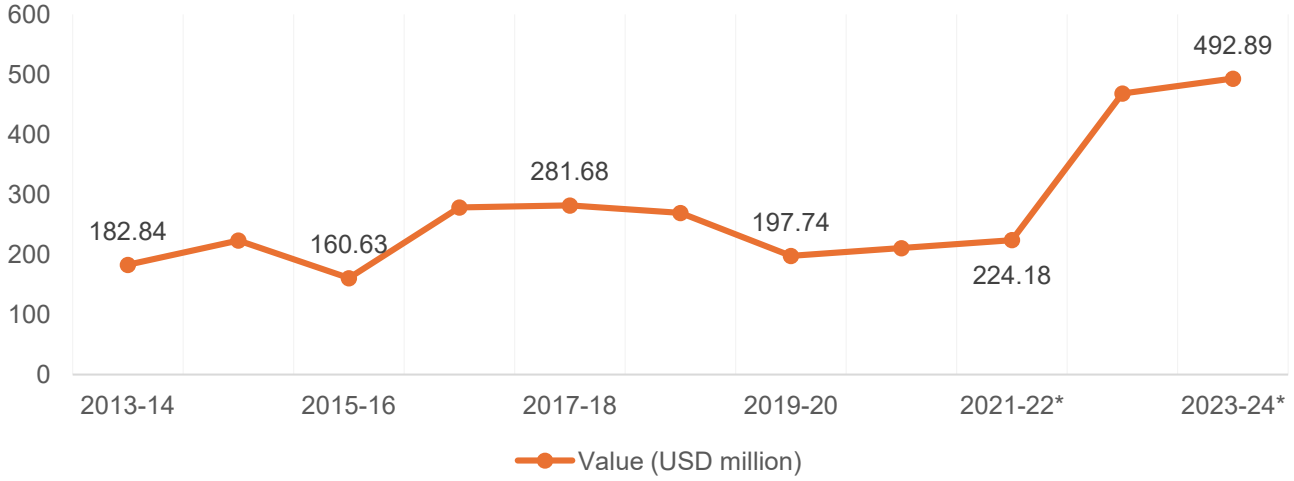
For cocoa products, Cocoa Beans, Cocoa powder of coating sugar, Cocoa shell husks skins, and Cocoa butter fat & oil are the major exported commodity products. The exports of cocoa products from the state have grown at a 4% AAGR since 2013-14. U.S.A, Netherland, UAE, Nepal, Indonesia, and Brazil are major export destinations for India's Cocoa products.

In terms of poultry products, exports from Karnataka have shown a remarkable Average Annual Growth Rate (AAGR) of 28%, surpassing India's export Compound Annual Growth Rate (CAGR) of 10% from 2013-14 to 2023-24. Karnataka's share in India's total poultry product exports stands at 4%.

Marine Products

In Karnataka, the export of marine products has shown a notable Average Annual Growth Rate (AAGR) of 17% by quantity and 16% by value during 2013-14 to 2023-24. Karnataka's share in national marine product exports stands at 14% by quantity and 7% by value.

Figure 24: *Trends in marine exports of Karnataka*



Source: MPEDA July 2024

In 2023-24, Karnataka's marine product exports amounted to 492.89 million USD increased from 224 US million in 2021-22, reflecting a steep increase and state's significant contribution to the marine export sector with impressive growth rates.

4.4. Kerala

4.4.1. *State Overview*

Kerala, situated in the southwest corner of India, is a narrow strip of land covering approximately 38,863 sq. km, which represents about 1.18% of India's total area. According to the 2011 census, Kerala has a population of 3.34 crore. The state's Gross State Value Added (GSVA) at current prices totals ₹ 9251.83 billion, with the agriculture, forestry, and fishing sectors contributing ₹ 961.46 billion in 2022-23, making up 10% of the GSVA.

4.4.2. *Agricultural Scenario*

Kerala is characterized by 13 agro-ecological zones, classified based on factors such as precipitation patterns, soil types, topography, and altitude. It boasts the longest coastline among West Coast states in India, spanning 590 kilometers. Over the past decade (2013-14 to 2022-23), the agriculture sector has experienced a negative average annual growth rate of -0.7% in constant prices. Within this sector, the fisheries sector has demonstrated a positive average annual growth rate of 4%, outperforming both the crops sector(-1.8%), and the livestock sector, (-0.6%). In 2022-23, crops contributed 38%, livestock 28%, forestry and logging 18%, and fishing and aquaculture 17 % to the agriculture Gross State Value Added (GSVA), underscoring their critical importance to the state's economy (MoSPI,2024).

Food Grains, Non-Food Grains & Horticulture

In terms of agricultural production, Kerala holds modest national ranks in various food and non-food grain categories. For foodgrains, the state ranks 21st in rice production with 0.487 Million metric tonnes, contributing 0.38% nationally. Pulses and coarse cereals rank 29th, producing 0.0015 million metric tonnes and 0.0008 million metric tonnes, respectively. The total foodgrain production ranks 23rd at 0.489 million metric tonnes. In non-foodgrains, Kerala ranks 27th in oilseed production with 0.0003 million metric tonnes and 25th in sugarcane with 0.010 million metric tonnes. These figures reflect the state's agricultural output in key crop categories relative to national benchmarks. In Kerala's horticulture sector, notable rankings include 10th in fruits with 3.073 million metric tonnes (2.7%), 16th in vegetables with 2.805 million metric tonnes (1.4%), and 3rd in plantation crops with 4.090 million metric tonnes (22.3%). Additionally, the state ranks 13th in spices with 0.157 million metric tonnes (1.3%), highlighting its significant horticultural contributions nationally.

Figure 25: *Food grains, non-food grains and horticulture production statistics in Kerala*

Category	National Rank	Item	Production (MMT)	National Share
Food Grains	21	Rice	0.5	0.4%
	29	Pulses	0.001	0.01%
	29	Coarse Cereals	0.001	0.002%
	23	Total Foodgrains	0.5	0.2%
Non-food Grains	27	Oil Seed	0.0003	0.001%
	25	Sugarcane	0.01	0.002%
Horticulture	10	Fruits	3.1	3%
	16	Vegetables	2.8	1%
	3	Plantation	4.1	22%
	13	Spices	0.2	1%
	13	Honey	0.002	2%
	11	Horticulture	10.1	3%

Source: RBI Handbook of Statistics on Indian States 2023, MoAFW 2024

Kerala excels in several agricultural sectors with a leading position in jackfruit and nutmeg production. The state is also prominent in tapioca and foot yam, and holds strong rankings in coconut, arecanut, and cocoa. In spices, Kerala leads in cardamom, vanilla, and nutmeg, reinforcing its dominance in spice cultivation. This diverse production base supports Kerala's robust food processing industry.

Figure 26: *Top Agricultural Products in Kerala*

Category	National Rank	Item	Production (MMT)	National Share (%)
Fruit	1	Jack Fruit	1.4	43%
	11	Banana	0.9	2%
	13	Mango	0.5	2%
	4	Pineapple	0.1	8%
	14	Papaya	0.1	2%
	21	Guava	0.005	0.1%
	11	Sapota	0.002	0.3%
	4	Passion Fruit	0.002	4%
	28	Total Citrus	0.002	0.01%
Vegetables	2	Tapioca	2.3	37%
	2	Foot Yam	0.2	18%
	19	Brinjal	0.05	0.4%
	15	Peas	0.03	0.4%
	18	Bittergourd	0.02	1%
Plantation Crops	3	Coconut	3.894	25%
	2	Arecanut	0.1	7%
	6	Cashewnut	0.1	10%
	2	Cocoa	0.01	35%
	7	Betelvine	0.01	1%
Spices	1	Nutmeg	0.02	94%
	1	Cardamom	0.022	66%
	1	Vanilla	0.000031	46%
	2	Clove	0.0004	23%
	2	Black Pepper	0.03	22%
	3	Tamarind	0.03	20%

Source: MoAFW 2024

4.4.3. *Livestock and Fisheries Sector*

In the national livestock and poultry sector, egg production stands at 2.24 billion units, representing 2% of the national share, while milk production totals 2.6 million tonnes, accounting for 1%. Meat production reaches 0.47 million tonnes, with cattle meat leading at 0.10 million tonnes (43% of the total meat), followed by buffalo meat at 0.133 million tonnes (7.7%), goat meat at 0.01 million tonnes (1%), and poultry meat at 0.22 million tonnes (4%). In the fisheries sector, inland fish production is 0.23 million tonnes (2% of the national share), marine fish production is 0.69 million tonnes (16%), and total fish production amounts to 0.9 million tonnes, making up 5% of the national share.

Figure 27: *Livestock, Poultry and Fisheries Production Statistics in Kerala*

Category	National Rank	Item	Production	National Share
Livestock & Poultry	14	Egg	2.24 Billion No	2%
	16	Milk	2.6	1%
	8	Meat	0.47	5%
	1	Cattle Meat	0.10	43%
	5	Buffalo Meat	0.133	7.7%
	15	Goat Meat	0.01	1%
	8	Poultry	0.22	4%
Fisheries	13	Inland	0.23	2%
	3	Marine	0.69	16%
	5	Total Fish	0.9	5%

Source: BAHS,2023, Handbook of Fisheries Statistics 2023

4.4.4. *Infrastructure*

Connectivity

In Kerala, the state's connectivity infrastructure supports robust transportation and logistics networks. It encompasses 1782 kilometers of National Highways as of 2023, and a total road length of 259932 kilometers as of 2019. The railway network spans 1047 kilometers, complemented by 4 international and 3 domestic airports. The state's maritime connectivity includes 1 major port in Cochin and 17 non-major ports, facilitating extensive trade and transportation activities across the region.

Table 22: Policy Incentives for Food Processing Sector in Kerala

Connectivity	*Details*
Roads	National Highways (NH): 1782 kms (2023)
	Total Road Length:259932 kms (2019)
Railways	Railway Lines: 1,047 kms
Airports	International Airports: 4
	Domestic Airports: 3
Ports	Major Ports: 1 (Cochin)
	Non-Major Ports: 17

Processing Infrastructure

In Kerala, the food processing sector benefits from a robust infrastructure network. It includes 14 production clusters, 2 mega food parks, 15 warehouses, 2 agriculture production clusters, and 6 cold chains, supporting operational food processing units across various segments such as meat (4 factories), fish & seafood (172 factories), fruits & vegetables (47 factories), oils (79 factories), dairy (92 factories), grain mills (134 factories), other food products (959 factories), animal feeds (27 factories), and beverages (79 factories). This infrastructure plays a crucial role in enhancing processing efficiency and facilitating distribution, underscoring Kerala's significant contributions to India's food processing industry.

Table 23: Sector wise Food Processing Units in Kerala

Commodity Group	*Number of Factories*	*Factories in Operation*	*% Operational*	*% Share of sector*
Meat	4	4	100%	2%
Fish & Seafood	173	172	99%	27%
Fruit & Vegetables	62	47	76%	4%
Oils	79	79	100%	4%
Dairy	92	92	100%	5%
Grain Mills	147	134	91%	1%
Other Food Products	1109	959	86%	10%
Animal Feeds	27	27	100%	3%
Beverages	79	79	100%	4%
Total	1772	1593	90%	-

Source: ASI 2023

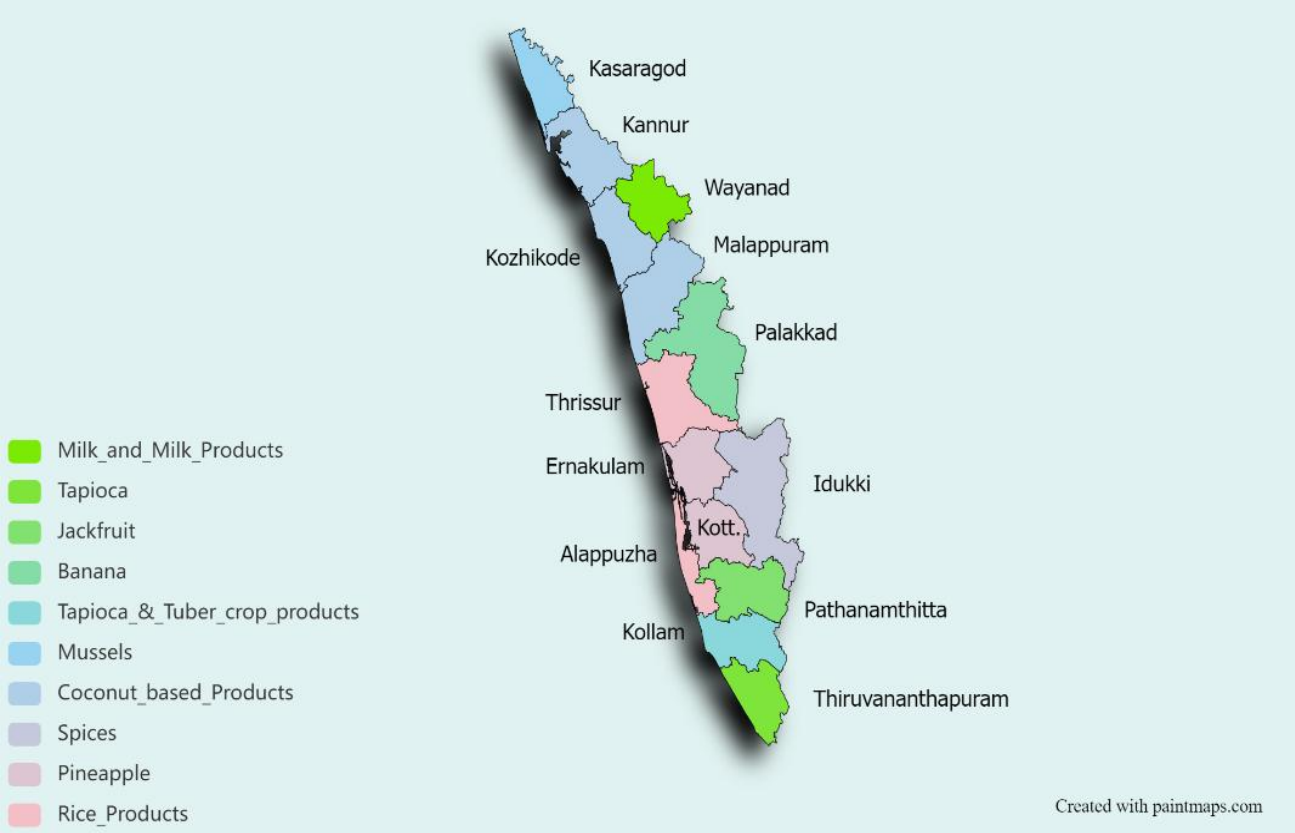
Table 24: Food Processing Infrastructure Mapping in Kerala

Food Processing Infrastructure Type	*Number*
Production Clusters	14
Mega Food Parks	2
Warehouses	15
Agriculture Produce Clusters	2
Cold Chains	6

Source: Nivesh Bandhu Portal

Kerala's ODOP clusters enhance the food processing sector by focusing on regional strengths: Alappuzha and Thrissur specialize in rice products, Ernakulam and Kottayam in pineapple, and Idukki in spices. Key districts like Kannur and Kozhikode are prominent in coconut-based products, while Kollam emphasizes tapioca and tuber crops. Kasargod excels in mussels, Pathanamthitta in jackfruit, and Palakkad in bananas. Wayanad leads in milk products, reflecting Kerala's diverse agricultural and processing capabilities.

Figure 28: *ODOP Production Cluster Mapping in Kerala*



Source: Nivesh Bandhu Portal

4.4.5. *Policy*

Single Window Clearance System

Kerala's Industrial Single Window Clearance Boards & Industrial Township Area Development Act of 1999 established a streamlined process for issuing licenses and clearances to industrial enterprises.

The Act created:

1. Industrial Area Boards: For clearing statutory approvals in Industrial Parks, Estates, and Growth Centres. The District Collector chairs these boards, with the Industrial Area's Designated Authority as Convenor.
2. District Single Window Clearance Boards: Managed by the District Collector and General Manager of the District Industries Centre, handling applications for investments up to Rs. 15 Crore.
3. Kerala State Single Window Clearance Board: The apex body chaired by the Chief Secretary, with the KSIDC Managing Director as Convenor and department heads as members. It handles applications for investments over Rs. 15 Crore and serves as the Appellate Authority.

KSIDC

Kerala State Industrial Development Corporation (KSIDC) is the premier agency of the Government of Kerala, mandated to for industrial and investment promotion in Kerala. Formed in 1961, KSIDC's primary objective was to promote, facilitate and finance large and medium-scale industries and catalyze the development of physical and social infrastructure required for industrial growth in the state. The one-stop-shop for any investment in Kerala, KSIDC offers a comprehensive set of services that an investor needs to set up an enterprise in the State.

Table 25: Policy Incentives for Food Processing Sector in Kerala

Policy Incentives	*Description*
Name of Policy	Kerala Industrial & Commercial Policy 2018
Nodal Agency	Directorate of Industries and Commerce, Government of Kerala
Single Window Clearance System	K-SWIFT https://kswift.kerala.gov.in/index
Power/Electricity Subsidy	NA
Capital Subsidy	NA
VAT/CST/SGST/TAX Exemption/Reimbursement	NA
Freight/Transport Subsidy	NA
Interest Subsidy	Loans at affordable interest rates available from Kerala Financial Corporation for MSMEs
Employment Generation	Incentivizing additional employment generation: 75% of the statutory employer contribution for additional employees over and above 31-03-2017 level will be borne by Government for 3 years for enterprises coming under recognized industrial park/zones.
Others	Following incentives will be provided to enterprises coming under recognized industrial park/zones
	100 % stamp duty / registration fee exemption for all allotments
	Environmental Protection Infrastructure Subsidy: Dedicated Effluent Treatment Plants (ETP) and / or Hazardous Waste Treatment Storage and Disposal Facility (HWTSDF) set up by individual manufacturing units would be eligible for an Environment Protection Infrastructure subsidy
	Incentivizing additional employment generation: 75% of the statutory employer contribution for additional employees over and above 31-03-2017 level will be borne by Government for 3 years

4.4.6. Export Current Scenario

During the financial year 2023-24, Kerala recorded agricultural exports amounting to 545.77 million USD, contributing 2% to India's overall agricultural and allied sector[4] export value for the same period.

The primary agricultural and allied sector commodities exported from Kerala, ranking highest in terms of value, were Cashew Kernels, Non-Basmati Rice, Miscellaneous Preparations, Processed Fruits, Juices & Nuts, Cereal Preparations. These five commodities collectively represented 61% of Kerala's total agricultural and allied sector exports by value and 23% by volume, amounting to 330.24 million USD in the fiscal year 2023-24. Apart from these products Kerala has contributed significantly through exports of coir products, Tea, coffee, spices and poultry products, these products also involve processing.

In the processed food sector, Kerala's major exports in year 2023-24 comprised Cashew Kernels, Processed Fruits, Juices & Nuts, Cereal Preparations, Processed Vegetables, Milled Products, Jaggery & Confectionery, and Cucumber and Gherkins (prepared & preserved). These commodities collectively accounted for 52% by value and 14% by volume of Kerala's total agricultural and allied sector exports, amounting a total value of 283.95 million USD in the same year.

Export Performance of agricultural and processed commodities

Agricultural Products[5]

Coir products, including Coir Pith, Coir Yarn, Tufted Mat, Coir Fibre, Handloom Mat, and Coir Geotextiles, are among the key commodities exported from India. According to the Coir Board, India shipped 1264.8 thousand metric tons of coir and coir products valued at 399217.97 lakh rupees in year 2022-23. Kerala exported 119.3 thousand metric tons of coir in 2022-23, accounting for 9% of India's total exported quantity for that year. Major importers of India's Coir and Coir products include the USA, China, Netherlands, South Korea, UK, Spain, Australia, Italy, Germany, and Canada.

Kerala is renowned for its Nilgiri tea, a prized variety among tea connoisseurs. In addition to Nilgiri tea, India exports various types of tea, including Assam, Darjeeling Black tea, Regular tea, green tea, Herbal tea, Masala tea, and Lemon tea. Major importers of Indian tea include Russia, Iran, UAE, USA, the UK, Germany, and China. Kerala exported 74.45 thousand metric tons of tea in the fiscal year 2022-23.

The volume of coffee exported from Kerala has shown a compounded annual growth rate of 11% since 2018-19. The largest importers of Indian coffee include Italy, Germany, Belgium, and the Russian Federation. In 2022-23, Kerala exported 47.25 thousand metric tons of coffee, reflecting the state's significant contribution to India's coffee export market.

The top spices of Kerala are Pepper, Cardamom, Ginger, Clove, Nutmeg and Turmeric. Exports from Kerala are growing at 5% of AAGR since 2018-19. In 2022-23 Kerala exported 93.6 thousand MT of spices.

4 Excluding Marine Products. Products included are as per listing on Agri exchange platform.

5 Data for Coir, Tea, Spices, coffee is taken from Commodity wise Exports through Cochin Port, 2018-19 to 2022-23.

Processed foods

Table 26: Export of major processed agriculture products by Kerala in TE2023-24

Products	*Kerala*		*India*		*Share of Kerala in India's export of the commodity (TE2023-24)*	*Share of the product in Kerala's overall agriculture exports TE2023-24*	*Annual Average Growth Rate (AAGR)[*
	Value (USD million)	QTY (1000. MT)	Value (USD million)	QTY (1000. MT)	By Value	By Value	2018-19 to 2023-24
Cashew kernels	169.6	22.6	382.7	66.9	44%	34%	-0.11
Processed fruits, juices & nuts	38.1	10.4	586.5	417.2	7%	8%	0.12
Cereal preparations	30.9	18.3	748.7	476.7	4%	6%	0.09
Processed vegetables	25.8	12.2	647.5	469.5	4%	5%	0.1
Milled products	16.1	22.5	253.7	527.2	6%	3%	0.15

Source: APEDA July 2024

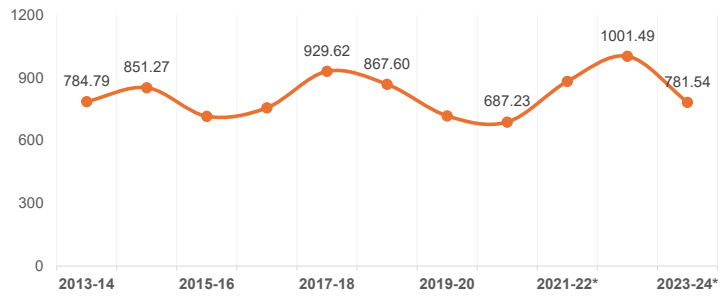
The export of milled products from Kerala has demonstrated a commendable compounded annual growth rate of 15% from 2013-14 to 2023-24. These milled products include Wheat or Meslin Flour, Maize (Corn) Flour, Rice Flours, and Other Cereal Flour. In 2023-24, India's total milled product exports amounted to 172.69 million USD, with Kerala contributing 11% to this figure, equivalent to 18.9 million USD in 2023-24, highlighting the state's significant role in the export of milled products.

In 2023-24, Kerala's poultry product [6] exports accounted for 16% of India's total export value from poultry products. The value of Kerala's poultry product exports amounted to 29.6 million USD. Major export destinations for India's poultry products include Oman, Indonesia, Maldives, Qatar, United Arab Emirates, and Sri Lanka.

In 2023-24, Kerala exported 187.35 thousand metric tons of marine products valued at 781.54 million USD. These exports accounted for 11% of India's total marine exports, both in terms of value and volume

Figure 29: *Marine Products Exports from Kerala (US Million)*

Figure 29: Marine Products Exports from Kerala (US Million)



Source: MPEDA (port wise exports) July 2024

6 Poultry products implies those which are listed in APEDA site. (https://apeda.gov.in/apedawebsite/SubHead_Products/Poultry_Products.htm) It excludes Albumin (egg and milk).

4.5. Telangana

4.5.1. *State Overview*

Telangana, established on June 2, 2014, is the youngest state in India. Situated in the southern Indian peninsula on the Deccan Plateau, it is land-locked with Hyderabad serving as its capital. The state spans a total geographical area of 1,12,077 square kilometres and has a population of 3.50 crore. In the fiscal year 2022-23, Telangana's Gross State Value Added (GSVA) at current prices amounts to Rs. 13404.96 billion lakhs, with the agriculture, forestry, and fishing sectors contributing Rs. 2114.22 billion , accounting for 15.8% of the GSVA.

4.5.2. *Agricultural Scenario*

Telangana State is divided into three agro-climatic zones based on geographical characteristics such as rainfall, temperature, and soil types. Over the past decade, the agriculture sector has experienced an average annual growth rate of 4.9 % in constant prices. Within this sector, fisheries sector has grown significantly faster than crops (3.9 %) and livestock sector (7.8 %), with an average annual growth rate of 7.9 %. In 2023-24, crops contributed 48%, livestock 47%, forestry and logging 2%, and fishing and aquaculture 4 % to the agriculture Gross State Value Added (GSVA), underscoring their critical importance to the state's economy (MoSPI,2024).

Food Grains, Non-Food Grains & Horticulture

In the agricultural landscape of Telangana, the state ranks prominently in both foodgrains and non-foodgrains categories nationally. It stands 4th in rice production, contributing 12.41 million metric tonnes with a 9.58% national share. In pulses and coarse cereals, it holds the 9th position, producing 0.576 million metric tonnes and 2.34 million metric tonnes respectively. Overall, Telangana's total foodgrains production is ranked 9th nationally, amounting to 15.34 million metric tonnes. In non-foodgrains, the state ranks 10th in oilseeds with 0.681 million metric tonnes and 12th in sugarcane with 2.86 million metric tonnes. In Telangana, horticulture production spans various sectors with notable rankings nationally. The state stands out in spice production, ranking 5th with 0.835 million metric tonnes, contributing significantly to its agricultural landscape. In fruits, Telangana ranks 15th with 2.384 million metric tonnes and in vegetables 20th with 1.072 million metric tonnes. The plantation sector, however, ranks 23rd with a modest production of 200 metric tonnes. Honey production ranks 20th at 0.001 million metric tonnes, while overall horticultural production places Telangana 19th nationally, with 4.361 million metric tonnes.

Figure 30: *Food grains, non-food grains and horticulture production statistics in Telangana*

Category	National Rank	Item	Production (MMT)	National Share
Food Grains	4	Rice	12.4	9.6%
	9	Pulses	0.576	2.11%
	9	Coarse Cereals	2.349	4.597%
	9	Total Foodgrains	15.3	4.9%
Non-food Grains	10	Oil Seed	0.681	1.794%
	12	Sugarcane	2.86	0.652%
Horticulture	15	Fruits	2.4	2%
	20	Vegetables	1.1	1%
	23	Plantation	0.0	0%
	5	Spices	0.8	7%
	20	Honey	0.001	1%
	19	Horticulture	4.4	1%

Source: RBI Handbook of Statistics on Indian States 2023, MoAFW 2024

Figure 31: *Top Agricultural Products in Telangana*

Category	National Rank	Item	Production (MMT)	National Share (%)
Fruit	5	Mango	1.1	5%
	5	Total Citrus	0.8	5%
	10	Papaya Production	0.1	3%
	15	Guava	0.1	2%
	18	Banana	0.1	
	13	Watermelon	0.04	1%
	7	Sapota	0.02	2%
	7	Pomegranate	0.02	1%
	6	Custard Apple	0.01	2%
	2	Dragon Fruit	0.01	15%
Vegetables	15	Tomato	0.3	2%
	10	Chillies	0.1	2%
	17	Onion	0.1	0.4%
	16	Brinjal	0.1	1%
	16	Cucumber	0.03	2%
Plantation Crops	13	Betelvine	0.0	0.030%
	17	Coconut	0.0	0.001%
Spices	2	Red Chillies (Dried	0.7	25%
	4	Turmeric	0.10	9%
	5	Ajwan	0.00	4%
	4	Curry Leaf	0.001	2%
	16	Ginger	0.02	1%

Source: MoAFW 2024

4.5.3. *Livestock and Fisheries Sector*

The state ranks 13th nationally in milk production, yielding 5.854 million metric tonnes with a 2.5% share. It excels in egg production, ranking 3rd in India with 17.67 billion units (13%). Telangana also ranks 5th in meat production, producing 1.080 million metric tonnes annually (11%). Within the meat category, it stands out notably: 3rd in buffalo meat with 0.156 million metric tonnes (9%), 1st in sheep meat with 0.354 million metric tonnes (35%), 6th in goat meat with 0.082 million metric tonnes (6%), and 6th in poultry with 0.482 million metric tonnes (10%). These rankings underscore Telangana's pivotal role in India's livestock and poultry industries. The state ranks 9th nationally in inland fish production, yielding 4.38 lakh metric tonnes with a 3% share.

Figure 32: *Livestock, Poultry and Fisheries Production Statistics in Telangana*

Category	National Rank	Item	Production (MMT)	National Share (%)
Fruit	5	Mango	1.1	5%
	5	Total Citrus	0.8	5%
	10	Papaya Production	0.1	3%
	15	Guava	0.1	2%
	18	Banana	0.1	
	13	Watermelon	0.04	1%
	7	Sapota	0.02	2%
	7	Pomegranate	0.02	1%
	6	Custard Apple	0.01	2%
	2	Dragon Fruit	0.01	15%
Vegetables	15	Tomato	0.3	2%
	10	Chillies	0.1	2%
	17	Onion	0.1	0.4%
	16	Brinjal	0.1	1%
	16	Cucumber	0.03	2%
Plantation Crops	13	Betelvine	0.0	0.030%
	17	Coconut	0.0	0.001%
Spices	2	Red Chillies (Dried	0.7	25%
	4	Turmeric	0.10	9%
	5	Ajwan	0.00	4%
	4	Curry Leaf	0.001	2%
	16	Ginger	0.02	1%

Source: BAHS,2023, Handbook of Fisheries Statistics 2023

4.5.4. *Infrastructure*

Connectivity

Telangana boasts robust connectivity infrastructure vital for its economic activities. The state features 4,926 kilometres of national highways as of 2023, complemented by a total road network spanning 140,555 kilometres. Its railway lines extend over 1,913 kilometres, facilitating efficient transportation across the region.

Table 27: Road, Railways, Airport & Port Infrastructure Mapping in Telangana

Connectivity	*Details*
Roads	National Highways (NH): 4926 kms (2023)
	Total Road Length: 140555 kms (2019)
Railways	Railway Lines: 1,913 kms
Airports	International Airports: 1

Processing Infrastructure

Telangana's food processing sector is supported by a diverse infrastructure aimed at enhancing production capabilities and supply chain efficiency. The state hosts 33 production clusters and 2 mega food parks, bolstering its processing capabilities across various agricultural segments. With 25 warehouses and 11 cold chains strategically positioned, Telangana ensures adequate storage and preservation facilities for perishable goods. This infrastructure contributes significantly to the sector's operational food processing units, with a notable presence in grain mills (2291), dairy (87), and meat processing (6), reinforcing its pivotal role in India's food processing landscape.

Table 28: Sector wise Food Processing Units in Telangana

Commodity Group	*Number of Factories*	*Factories in Operation*	*% Operational*	*% Share of sector*
Meat	6	6	100%	4%
Fish & Seafood	0	0	-	-
Fruit & Vegetables	18	16	89%	1%
Oils	174	137	79%	6%
Dairy	103	87	84%	5%
Grain Mills	2856	2291	80%	14%
Other Food Products	363	283	78%	3%
Animal Feeds	78	72	92%	7%
Beverages	68	50	74%	3%
Total	3666	2942	80%	-

Source: ASI 2023

Table 29: Food Processing Infrastructure Mapping in Telangana

Food Processing Infrastructure Type	*Number*
Production Clusters	33
Mega Food Parks	2
Warehouses	25
Agriculture Produce Clusters	1
Cold Chains	11

Source: Nivesh Bandhu Portal

Telangana's ODOP clusters strengthen the food processing sector by focusing on regional specialties: Adilabad and Kamareddy on soybean-based products, and Hyderabad, Medak, and Warangal Urban on ready-to-eat snacks. Bhadadri Kothagudem, Jayashankar Bhupalpally, and Khammam specialize in chillies, while Jagitial and Nagarkurnool focus on mangoes. Rice-based products are prominent in Jangaon, Karimnagar, and Peddapalli. Groundnut-based products are highlighted in Jogulamba Gadwal and Narayanpet, and millet products in Mahabubnagar and Komaram Bheem. Additionally, milk-based products are emphasized in Sangareddy, Suryapet, and Yadadri Bhuvanagiri, while vegetables are a key focus in Ranga Reddy, Siddipet, and Vikarabad.

Figure 33: *ODOP Production Cluster Mapping in Telangana*

Source: Nivesh Bandhu Portal

4.5.5. *Policy*

Single Window Clearance System

The Telangana State Industrial Project Approval and Self-Certification System (TS-iPASS) Act, 2014 streamlines the clearance process for establishing industries in Telangana. It integrates all relevant departments, sets approval timelines between 1 to 30 days, and includes pre-scrutiny to assist entrepreneurs. Authorities are required to request additional information only once within three days, and entrepreneurs can hold officials accountable for delays.

TGIIC

The Telangana Industrial Infrastructure Corporation Limited (TGIIC) is the state's nodal agency for industrial development, focusing on accelerating growth through initiatives like TS-iPASS and streamlined clearances. It manages industrial areas ranging from 15 to 2,500 acres across all districts and plays a key role in Public-Private Partnerships. TGIIC operates nine zonal offices and has developed 156 Industrial Parks covering 28,458 acres, with 5,730 acres currently available. Additionally, it has identified 145,683 acres of unutilized government land for industrial use, forming the Industrial Land Bank.

Table 30: Policy Incentives for Food Processing Sector in Telangana

Policy & Incentives	*Description*
Name of Policy	Telangana State food processing policy & T-IDEA
Nodal Agency	Telangana State Food Processing Society
Single Window Clearance System	Single Window clearance(http://industries.telangana.gov.in/SWCInterduction1.aspx)
Power/Electricity Subsidy	Creation, Modernization and Expansion of Food Processing Units
	Food processing industry would be granted the status of a seasonal industry and would be eligible to get relief from minimum electricity demand charges during the closure period.
	Food processing industries will be eligible for electricity duty exemption for captive power plants for self-use for a period of 5 years from commencement of commercial operation.
	For units established in the Special food processing
	Power rebate of Rs. 2 per unit for 5 years
	MSME
	Fixed power cost reimbursement @ Rs. 1.00 per unit for 5 years from the date of commencement of commercial production.
	Medium Enterprises & Large Industries
	Fixed power cost reimbursement @ Rs.1.00 per unit for a period of 5 years from the date of commencement of commercial production.
Capital Subsidy	Units established by SCS, STS and Minorities
	Capital grant of 15% upto Rs 20 lakh (over and above any capital grant available from MoFPI and/or state industrial policy).
	Land cost rebate of 33% upto Rs 20 lakhs.
	Units established by SHGS and FPOS
	Capital grant of 15% upto Rs 1 Crore (over and above capital grant available from MOFPI) and/or state Individual policy.
	Land cost rebate of 33% upto Rs 20 lakhs. Land cost rebate of 25% shall be extended for the first 20 % plots as early bird
	MSME
	25% rebate in land cost limited to Rs.10.00 Lakhs in Industrial Estates/ Industrial Parks.
	25% Land conversion charges for industrial use limited to Rs.10.0 lakhs
	15% investment subsidy on fixed capital investment subject to a maximum of Rs.20.00 lakhs.
	Seed capital assistance to First Generation Entrepreneurs to set-up Micro Enterprises @10% of the Machinery cost, which will be deducted from the eligible investment subsidy.

Policy & Incentives	*Description*
	Medium Enterprises & Large Industries
	25% rebate in land cost limited to Rs.10.00 Lakhs in Industrial Estates/Industrial Parks.
	25% Land conversion charges for industrial use limited to Rs.10.0 lakhs only for Medium Enterprises.
	Creation, Modernization and Expansion of Food Processing Units
	Government of Telangana would incentivize development of new food processing units as well as modernization and expansion of existing food processing units in the state with Grant-in-aid of 35% of project cost up to Rs. 4 crores
	Development of Processing Clusters in the State
	Units developed in the identified cluster would be eligible for grant-in-aid of 35% of project cost up to Rs. 10 crores
	Development of New Food Parks and Promotion of New and Existing Food Parks
	Government would also support food parks with capital subsidy of 50%. The maximum limit of the grant will be evaluated on a pro-rata basis at the rate of Rs. 1 crore per acre subjected to an upper cap of 50 crores depending upon land size for areas where such project would enable development of a crucial cluster
	Development of Logistics and Supply Chain Infrastructure for Food Produce
	Grant-in-aid of 35% of project cost up to Rs. 10 crores for for silos, warehouses, packhouses, cold storage, pre-cooling units etc. in identified areas
	Grant-in-aid of 50% up to Rs. 10 crores for frozen storage, deep freezers, vapor treatment facilities and irradiation facilities
	All food processing units and preservation facilities would be eligible for 50% grant up to Rs. 5 lacs for participating in domestic and global best practice certifications subjected to uninterrupted compliance to certification requirements. List of eligible certifications would be mentioned in the detailed guidelines.
	Support for Mega Projects in food Processing Industries
	In order to promote mega projects which bring in technology expertise and extensive backward and forward linkages, any project with net capital investment in plant and machinery more than Rs. 100 crore or providing employment to more than 1,500will be considered a Mega project. These projects will be eligible for tailor made incentives as per the provisions of Telangana state industrial policy
Interest Subsidy	For units established in the Special food processing zones
	Interest subvention of 75% of the total interest payable on the term loan of the unit, not exceeding a total of Rs 2 Crores.
	Units established by SCS, STS and Minorities
	0% Interest subvention of the interest payable on term loan (over and above 75%), total not exceeding Rs 2 Crores
	Units established by SHGS and FPOS
	10% interest subvention of the Interest payable on term loan (over and above 75%), total not exceeding Rs 2 Crores
	MSME
	Interest subsidy under Pavala Vaddi Scheme on the term loan taken on the fixed capital investment by New Micro and Small Enterprises in excess of 3% per annum subject to a maximum reimbursement of 9% per annum for a period of 5 years from the date of commencement of commercial production.

Policy & Incentives	*Description*
VAT/CST/SGST/ TAX Exemption/ Reimbursement	MSME
	100% reimbursement of Stamp duty and transfer duty paid by the industry on purchase of land meant for industrial use.
	Reimbursement of 100% net VAT/CST or State Goods and Services Tax (SGST) for a period of 5 years from the date of commencement of commercial production.
	Medium Enterprises & Large Industries
	100% reimbursement of Stamp duty and transfer duty paid by the industry on purchase of land meant for industrial use.
	Reimbursement of 75% net VAT/CST or State Goods and Services Tax (SGST) for a period of 7 years from the date of commencement of commercial production for Medium Scale Enterprises or up to realization of 100% fixed capital investment, whichever is earlier.
	Reimbursement of 50% net VAT/CST or State Goods and Services Tax (SGST) for a period of 7 years from the date of commencement of commercial production for Large Scale Industries or up to realization of 100% fixed capital investment, whichever is earlier.
Employment Generation	Not Applicable
Freight/Transport Subsidy	Not Applicable
Others	For units established in the Special food processing zones
	100% reimbursement of APMC fee for 7 years.
	Government of Telangana through an empowered cabinet sub-committee shall offer tailor made Incentives to the following food processing and/or retall projects:
	Total fixed capital investment in plant and machinery of more than Rs 100 Crore.
	Direct employment of more than 1,000 persons.
	Total procurement of raw material from Telangana of more than Rs 500 Crore per annum.
	Total procurement of more than Rs. 100 Crore per annum from enterprises of state's SHGS, and FPOS.
	MSME
	50% Reimbursement of cost involved in skill upgradation and training the local manpower limited to Rs.2000 per person.
	50% subsidy on the expenses incurred for quality certification/ patent registration limited to Rs. 2.00 Lakhs.
	25% subsidy on specific cleaner production measures limited to Rs.5.00 Lakhs
	Medium Enterprises & Large Industries
	50% Reimbursement of cost involved in skill upgradation and training the local manpower limited to Rs.2000 per person.
	50% subsidy on the expenses incurred for quality certification/ patent registration limited to Rs. 2.00 Lakhs only for Medium Enterprises.
	25% subsidy on specific cleaner production measures limited to Rs.5.00 Lakhs.
	Infrastructure like roads, power and water will be provided at door step of the industry for standalone units by contributing 50% of the cost of infrastructure from IIDF with a ceiling of Rs.1.00 Crore, subject to (a) the location should be beyond 10 kms from the existing Industrial Estates/IDA's having vacant land/shed for allotment and (b) cost of the infrastructure limited to 15% of the eligible fixed capital investment made in the ind

4.5.6. *Current Export Scenario*

Telangana is amongst selective states that is part of Agriculture Export Policy 2018 of Government of India the objective this policy is to diversify the export basket and destinations, emphasizing high-value and value-added agricultural exports, particularly focusing on perishable goods. Additionally, the goal is to promote the export of novel, indigenous, organic, ethnic, traditional, and non-traditional agricultural products. Telangana government is making its efforts aimed towards enabling farmers to leverage export opportunities in overseas markets, thereby maximizing the benefits for the agricultural sector.

The topmost commodities contributing significantly to Telangana's total Agriculture and allied exports are cereal preparations, fruits and vegetables seeds, milled products, and maize. These four commodities collectively account for 54% by value and 59% by quantity in Telangana's overall Agriculture and allied sector export portfolio in 2023-24.

In the food processing industry, Telangana primarily exports cereal preparations, cucumber and gherkins (prepared & preserved), jaggery & confectionery, processed vegetables, and milled products. Together, these five commodities contributed 52% by export value and 65% in terms volume Telangana's total exports of agricultural and allied sector in 2023-24 highlighting their significant role in the state's export economy.

Export Performance of agricultural and processed commodities

Agriculture and Processed foods products

In 2023-24, Telangana's maize exports accounted for 6% of the state's total agricultural and allied sector export value, amounting to 17.02 million USD. At the national level, Telangana's maize exports contributed 4% to India's total maize export value. India's major maize export destinations in 2022-23 included Bangladesh, Vietnam, Nepal, Malaysia, and Sri Lanka, while important destinations as per the Maize Outlook 2023 were Mexico, Peru, Japan, China, and Colombia. Additionally, UAE, Sudan, Yemen, and Vietnam are identified as potential export destinations in Telangana's Draft Export Strategy Framework.

Table 31: Exports of major agriculture and processed commodities in TE2023-24 by Telangana in terms of value (million USD)

Products	*Telangana*		*India*		*Share of Telangana in India's export of the commodity (TE2023-24)*	*Share of the product in Telangana's overall agriculture exports (TE2023-24).*
	Value (million USD)	QTY (MT)	Value (million USD)	QTY (MT)	By Value (in %)	By Value (in %)
Fruits & vegetables seeds	353.8	14.3	13203.1	108.5	0%	13%
Maize	5489.3	11.8	2862274	860.2	4%	1%
Poultry products	4545	10.6	753409.6	129.9	4%	8%

7 The Products under Agriculture and Allied sector include those listed in APEDA.

Products	*Telangana*		*India*		*Share of Telangana in India's export of the commodity (TE2023-24)*	*Share of the product in Telangana's overall agriculture exports (TE2023-24).*
Milled products	5716.1	18	527213.2	253.7	7%	7%
Jaggery & confectionery	13622	17.8	610034.4	447.7	7%	4%
Cucumber and gherkins (prepd. & presvd)	5258.6	4.6	229821.3	224.9	2%	2%

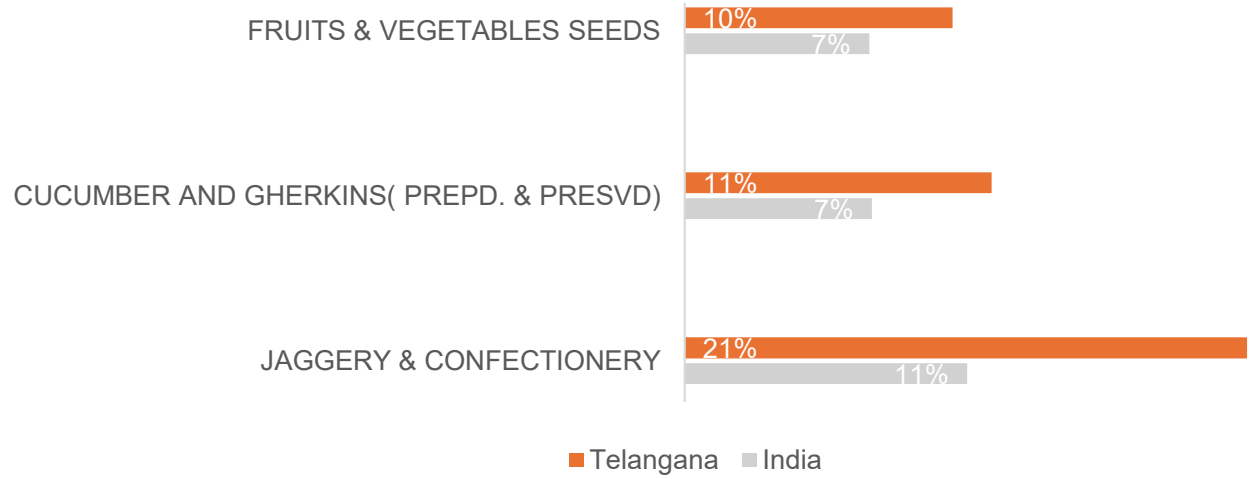
Source: APEDA July 2024

In respect of fruits & vegetables seeds, in 2023-24, Telangana exported 284.46 million metric tonnes of seeds valued at 14.6 million USD in 2023-24, contributing to 12% of the national level seed exports by value. India's major seed exports include Sugar Beet Seeds, Pomegranate Seeds, Beet Seeds, Tomato Seeds, Vegetables Seeds, and Fruit Seeds, with major importing countries being the U.S.A, Netherlands, Bangladesh, France, United Arab Emirates, Thailand, and Kenya. Notably, seed exports from Telangana have been growing at average annual growth rate of 10 % since 2013-14 to 2023-24.

Telangana's poultry products exports have shown robust growth, with an Average Annual Growth Rate (AAGR) of 25% since 2013-14. In 2023-24, Telangana's poultry product exports amounted to 14.58 million USD. At the national level, Telangana holds a 15% share in the exports of albumin (eggs and milk), totalling 3.14 million USD as of 2023-24. Additionally, in 2023-24, the share of poultry products in the total export value of India's poultry products was 8%.

Telangana plays a significant role in the milled products export sector, contributing 12% to the national level exports. In 2023-24, the state exported 5835.98 metric tonnes of milled products valued at 20.01 million USD, showcasing its strength in this category.

Figure 34: *AAGR by Value (million USD) of Major processed Food products during 2013-14 to 2023-24*



The export of Jaggery and confectionary from Telangana has witnessed remarkable growth, with an AAGR of 21% in export value since 2013-14 and outperforming national exports growth rates.

In 2023-24, Telangana accounted for 5% of India's total export value in this category, amounting to 19.96 million USD. The export range includes Cane Jaggery, Palmyra Jaggery, Raw Cane Jaggery, Sugar Confectionery, Chocolates, and Chewing gum.

Telangana's export of Cucumbers and Gherkins has been growing with an AAGR of 11% from 2013-14 to 2023-24. In 2023-24, the state exported 3925.36 metric tonnes of Cucumbers and Gherkins valued at 4.25 million USD. Major importers of these products from Telangana include the U.S.A, Germany, France, Spain, and Russia, reflecting the state's expanding presence in international markets.

Chapter 5

Agriculture and Processed Food Export Opportunities

Processed foods, known for their high value and increasing global demand driven by evolving consumer habits, present lucrative opportunities. In addition to the traditional exports like spices, coconut products, tea, and coffee, southern states possess vast opportunities to enhance their export potential by capitalizing on their natural coastal advantage. Key products like cucumber and gherkins, processed vegetables, and cereal preparations showcase significant trade potential, alongside processed fruits, juices, nuts, seeds, jaggery, confectionery, cocoa products, and various cashew-based products, indicating ample room for expansion and growth in the export market

5.1. Cucumber & Gherkins (PREPD. & PRESVD)

Globally, changing food habits have led to a surge in demand for processed food products, including preserved cucumbers, reflecting a shift towards convenient and ready-to-eat options in the market. As of TE2022 world market size in terms of volume 2437.63 thousand MT and 2669.01 million USD. The world's major importers of processed cucumber and gherkins (prepped. & presvd) include countries like the USA, Germany, France, Canada, UK, and the Netherlands. On the other hand, major exporters of these products are India, Germany, Turkey, USA, Netherlands, and Vietnam.

India stands as one of the largest exporters of cucumber and gherkins globally, Despite India exporting 28% by volume and 25% by value of the global demand between 2020-2022, there is still a noticeable gap between the world's demand and supply from India.

Table 32: Top Ten Importers of the world and India's exports

Importing Country	*TE2022 (Imports) QTY. MT*	*TE2022 (Exports from India) QTY. MT*
U S A	88159.31	60695.9
Germany	78517.43	11817.1
Netherland	69762.94	7868.23
Canada	56147.59	14390.9
France	51266.63	15397.7
U K	44173.09	6205.97
Spain	30522.36	15667.8
Japan	21317.88	2453.32
Poland	16629.98	5117.57
Australia	13848.99	8625.81

India exported 32% of cucumbers and gherkins demanded by the top 10 importers collectively during TE2022. The top ten importers (Table 32) of the cucumbers and gherkins resembling almost one fifth of the global demand.

Furthermore, India's market share varies significantly from country to country. For instance, despite being a dominant exporter to countries in the West with stringent Sanitary and Phytosanitary (SPS) norms, India manages to capture 30% of France's total imports in TE2022. In contrast, India secures only an 11% share of the Netherlands' total imports during the same period. This discrepancy highlights the existence of an opportunity for India to further enhance its export presence and competitiveness in the markets such as Netherlands, Germany, UK etc.

Table 33: India's major export destinations and unrealised trade potential

Importing country	*Trade Potential[8]-unrealized[9] USD million*
U S A	13
France	7.5
U K	2.128
Netherland	1.997
Belgium	1.2
Spain	0.888
Canada	0.881
Russia	0.762
Germany	0.645
Australia	0.31

Analyzing the table above (Table 33) it is evident that the USA holds the highest unrealized potential at 13 million, followed by France at 7.5 million and the UK at 2.128 million. Hence India has scope of expanding its current trade with these countries. Further Almost all the countries listed above are world's major importers. This shows India has been successful in tapping the world demand where it exists. Furthermore, India could also expand to markets of Poland, Japan etc. as these countries are also major importers of the product.

However, India's export growth rate lags the import growth rates of major importers like Germany, France, the Netherlands, Spain, and Poland in the EU. India is lagging in export growth rates compared to growth rates of imports of major importers in the world. For example, while Germany experienced an 8% positive Annual Average Growth Rate (AAGR) in imports of these products between 2020-2022, India's exports to Germany saw a negative AAGR of -20% during the same period. This disparity poses a challenge for Indian exporters to match market demand and competitiveness, particularly in Germany's processed cucumber and gherkins import market. Addressing the factors contributing to this negative trend is crucial to enhancing India's export performance in this specific segment.

Notably, states like Telangana, Tamil Nadu, Andhra Pradesh, Karnataka, and Kerala have played a significant role, collectively contributing 92% of India's total exports of cucumber and gherkins in both volume and value from 2020-21 to 2022-23.

5.2. Processed vegetables

The world demand for processed vegetables in TE 2022 was 28.3 million MT by volume and valued at 40 billion USD. Major importing countries globally are the USA, Germany, UK, France, and Japan. China, Belgium, Netherlands, Italy, and the USA are among the major exporters of processed vegetables in the world. India exported processed vegetables worth 526.93 million USD, equivalent to 409,699 MT in TE 2022. India's major export destinations for processed vegetables include the USA, UK, Germany, Spain, and the Netherlands. In the India's exports southern states namely Telangana, Tamil Nadu, Andhra Pradesh, Karnataka, and Kerala collectively exported 61,035 MT of processed vegetables valued at 105.39 million USD in 2023-24, contributing 13% to the total export value of processed vegetables in 2023-24.

8 Potential export value of product k supplied by country i to market j, in dollars, is calculated as supply × demand (corrected for market access) × bilateral ease of trade. Potential export -actual export = unrealized trade potential. (Export Potential Map (intracen.org))

9 Trade map HSN codes used for mapping trade potential - 200110 Cucumbers & gherkins, prepared/preserved and 071140 Cucumbers & gherkins provisionally preserved

Table 34: Top Ten Importers of the world and India's exports

Country (Major importers of the world)	*TE2022 (Imports) QTY. MT*	*TE2022 (Exports from India) QTY. MT*
U S A	3523839.77	45192.84
Germany	2414847.24	15919.52
U K	2153440.37	32004.6
France	1936573.08	1377.04
Japan	1785517.72	2174.09
Korea Rp	1453510.96	361.93
Netherland	1085153.71	5122.41
Italy	1006488.23	1148.81
Belgium	931951.19	4285.02
Spain	740029.4	7583.36

Source: APEDA July 2024

The major demand for processed vegetables primarily originates from the West. The ten countries listed (Table 34) as major importers of the world in the table collectively accounted for 58% of the global demand for processed vegetables by both value and volume in TE 2022. Despite this significant demand, the share of India's exports to these countries has been negligible, amounting to less than 1%. This disparity suggests that India has a substantial untapped potential to increase its exports of processed vegetables to these key importing countries.

Analysing the unrealized trade potential in various regions for India's export of processed vegetables[10], East and West Europe present a significant untapped opportunity of 861 million USD. North America follows closely with a trade potential of 485 million USD, while East Asia showcases a trade potential of 306 million USD. These figures highlight the potential for India to further explore and expand its export market for processed vegetables in these regions, emphasizing the need for strategic initiatives to capitalize on the existing trade potential and foster growth in the processed vegetables export sector.

India's export growth in processed vegetables lags the import growth of major importing countries. For instance, in terms of value, France's imports grew at a rate of 4% between 2020 to 2022, while India's exports were growing at negative rate of 13% during the same period. Similar trends are observed with Japan. Despite positive export growth rates to Spain, the UK, and the USA, India's export growth still falls behind the increasing import rates from these countries. This analysis highlights the need for India to address factors hindering export growth and explore strategies to enhance competitiveness in the global processed vegetables market, especially in key importing countries where growth rates surpass India's export performance.

5.3. Cereal preparations

Global demand for cereal preparations in TE2022 was 338.21 lakh MT valued at 87,718.49 million USD. The USA, Germany, UK, France, and the Netherlands stand out as major importers of cereal preparations worldwide, while Germany, Italy, France, Canada, Belgium, and the USA emerge as significant exporting players in the global market for cereal preparations.

10 HS code used -200599 Vegetables, prepared/preserved, n.e.s.

During the same period India exported 419.16 lakh MT of cereal preparations worth 659.25 million USD. India's major export destinations for cereal preparations include the USA, Nepal, Bangladesh, the United Arab Emirates, and the UK.

In India Telangana, Tamil Nadu, Andhra Pradesh, Karnataka, and Kerala collectively exported 146.64 thousand MT of cereal preparations valued at 222.44 million USD in 2023-24, contributing 26% to the total export value of cereal preparations in that year.

Table 35: Top Ten Importers of the world and India's exports

Country	*TE2022 (Imports) QTY. MT*	*TE2022 (Exports from India) QTY. MT*
Belgium	1012181.59	72.9
Canada	969748.96	15065.45
China P Rp	900840.41	785.26
France	1922550.45	239.2
Germany	2250834.14	1095.19
Italy	838172.3	560.39
Netherland	1747846.47	2204.86
Spain	736408.82	411.06
U K	2006693.55	14553.16
U S A	4402272.4	54243.15

Source: ITC Trade Map2024

The top ten major importers listed in the table accounted for 49% of the global demand by volume and 54% by value in TE2022. However, India's market share to the total demand of these countries have been negligible.

Table 36: India's major export destinations and unrealised trade potential

Importing country	*Unrealized potential (million USD)*
U S A	22
Nepal	1.3
Bangladesh	6.2
U Arab Emirates	NA
U K	5
Canada	2.3
Australia	4.5
Angola	6.1
Saudi Arab	6.3
Malaysia	3.5

Source: ITC Trade Map 2024

The USA stands out as a significant potential market with an unrealized potential of 22 million USD for imports and exports from India. India has untapped potential in its major export destinations, including Bangladesh (6.2 USD million), Angola (6.1 USD million), and Saudi Arabia (6.3 million USD), among others. India should focus on expanding its exports to new markets as well as existing markets.

5.4. Other Products

India, recognized as the world's second-largest producer of fruits, has yet to fully capitalize on its potential in the processed fruit sector, where its market share remains relatively low. Telangana, Tamil Nadu, Andhra Pradesh, Karnataka, and Kerala contribute significantly to the nation's exports accounting for 48% by volume and 41% by value of India's processed fruits, juices, and nuts exports[11]. The primary importers of these products include the United States, Germany, France, the Netherlands, and the United Kingdom, while leading exporters in this category comprise Brazil, China, Thailand, Mexico, and Turkey. Notably, India's main export destinations for processed fruit products are Saudi Arabia, the Netherlands, the United Arab Emirates, the United States, and Bangladesh. The country holds substantial potential for growth in this sector, particularly North America, the Middle East, and the European Union, including Western Europe as indicated by the ITC Trade Map Potential.

India's export potential for cocoa beans and products is majorly in the Middle East, the European Union (EU) and West Europe, and North America. Among these markets, the EU and West Europe exhibit the largest disparity between potential and actual export values, presenting an opportunity to realize additional exports worth $42 million (ITC trade map' July2024). While the five southern Indian states are significant producers of cocoa, most cocoa product exports—over 90%—are concentrated in Maharashtra and Goa. This concentration highlights a strategic opportunity for the southern states to enhance their processing capacities and capitalize on the growing export market.

The southern states of India, characterized by their unique tropical climate, offer a diverse range of products that hold substantial export potential. For instance, Tamil Nadu and Andhra Pradesh lead in sugarcane production, paving the way for the export of processed goods like jaggery and confectionery products. Additionally, coastal regions are well-suited for coconut cultivation, further enhancing the prospects for coir product exports. Notably, the southern states account for 97% of India's cashew exports, making cashew and related products (Annexure 1) particularly lucrative for international markets such as the European Union, Western Europe, the Middle East, and North America present promising avenues for expanding India's cashew exports (ITC Trade Map).

11 Refer classification by ITC Export Potential Map (intracen.org)

Chapter 6

Policy Outlook for Food Processing Sector

A well-developed food processing sector with advanced processing capabilities offers numerous benefits to consumers, farmers, and the economy. For consumers, it ensures enhanced food safety, quality, and nutrition, while providing a wider variety of convenient food options. Farmers benefit through better returns, market stability, reduced post-harvest losses, and encouragement of crop diversification. Economically, the sector generates employment, boosts export growth, diversifies the economy, and fosters rural development. It also drives innovation and technology transfer across industries.

Critically, food processing addresses key issues such as food security, by reducing post-harvest losses and ensuring year-round availability of food, and food inflation, by stabilizing prices through improved supply chain efficiency. Additionally, it contributes to nutritional improvement by fortifying processed foods. Overall, a robust food processing sector is essential for sustainable agricultural and economic development, delivering wide-ranging benefits while tackling crucial food security and nutrition challenges.

Thus, a growing food processing sector can push India towards achieving several Sustainable Development Goals (SDGs).

- Zero Hunger (SDG 2) by improving access to foods and reducing wastages
- No Poverty & Decent Work and Economic Growth (SDG 1) given its employment intensive nature and linkage between agri and industry
- Good Health and Well Being (SDG 3) by allowing access to nutrition

Towards scaling up India's food processing basket, there is a need to create conducive ecosystem for mitigating food loss and waste, strengthening the MSME sector, address sustainability in food processing, research and development integrating Framer Producer Organization (FPO), enabling access to credit, and promoting export competitiveness.

6.1. Mitigating food loss and waste

Food loss and waste in India are significant issues that affect both food security and sustainability. High levels of food loss and waste aggravate the situation of food insecurity as well as limiting the consistent access to nutritious food. Reducing food loss and waste can help in making more food available for consumption without increasing production. Right post harvest management and food processing can play a crucial role in addressing this in several ways across the food supply chain.

This loss occurs due to a variety of factors, including inadequate infrastructure, inefficient supply chains, and lack of awareness and training among farmers. The post-harvest loss in fruits range from 6.02 to 15.05%[12], and in vegetables it ranges from 4.87 – 11.61%. The challenge is not just lack of storage infrastructure, but also lack of pre-cooling and connectivity at farm gate. In many cases, inadequate transportation facilities, coupled with prolonged transit times, result in the deterioration of perishable before they reach the market and hence adding to significant monetary loss for the farmers.

Focus needs to be on creating appropriate infrastructure towards ensuring yearlong availability of seasonal perishables for processing, such as village level collection centres, community cooling facilities, common primary processing facilities, district-level pre-cooling centres, etc.

It is also important to ensure effective handling and transportation to reduce food loss and an encouragement for private investment and public private partnership to improve access to transport that ensure quick and seamless movement of the produce from production to consumption centre, would enable the creation of seamless cold supply chain.

Promoting primary processing at the farm level such as drying, canning, packaging, etc., while focussing on higher levels of value addition. Along with moving up the value chain in processed food products, establishing efficient backward linkages is key to contribute to nation's food security as well as reducing post-harvest losses.

Implementing strategies to reduce waste and promote a circular economy is vital. This includes recycling by-products and waste materials, optimizing packaging to reduce material use, and finding innovative ways to utilize surplus food. Save food share food is an initiative of FSSAI that may be leveraged by the food processing industry for distribution of surplus food ensuring reduction in food waste. However, it is important to note that while food processing can mitigate food loss, it can also contribute to issues such as nutrient loss and the generation of food waste if not managed properly. Therefore, sustainable and efficient food processing practices are essential to maximize the benefits while minimizing negative impacts on food loss and waste.

6.2. Strengthening MSME sector

MSMEs play a pivotal role in the fight against food loss and waste by leveraging their agility, innovation, and localized knowledge to implement effective solutions throughout the food supply chain.

MSMEs should focus on producing high-quality food products that differentiate themselves in the market. This includes emphasizing unique flavours, local ingredients, health benefits, or sustainable production practices. Quality certifications can also enhance credibility.

Developing a strong brand identity and effective marketing strategies is crucial. This includes creating appealing packaging, establishing an online presence through websites and social media, participating in food fairs and exhibitions, and engaging in local community events.

MSMEs should explore diverse distribution channels to reach a broader consumer base. This includes partnering with supermarkets, local grocery stores, specialty food shops, restaurants, and online platforms. Developing relationships with distributors and wholesalers can also expand market reach.

Supporting and empowering MSMEs through policy measures, infrastructure development, and access to technology can further enhance their contribution to controlling food loss and promoting sustainable food systems.

PMFME scheme of the govt of India is an excellent effort in the direction to transform the unorganized sector of micro food processing enterprises into a vibrant and competitive segment of the food processing industry in India.

The implementation of business model, will help the beneficiaries in the food processing sector to effectively create and expand markets for their products, enhance competitiveness, and contribute to economic growth and employment generation in the sector.

6.3. Promoting sustainability in the food processing industry

Promoting sustainability in food processing industry is increasingly crucial as global concerns about environmental impact, resource scarcity, and social responsibility are gaining prominence. Some of the key aspects of sustainability in the food processing industry that should drive the future of this sector are:

Resource Efficiency: Efficient use of resources such as water, energy, and raw materials is fundamental to sustainability. There is need for greater emphasis on adoption of technologies and practices that minimize the resource consumption and waste generation.

Waste Reduction and Circular Economy: Implementing strategies to reduce waste and promote a circular economy is vital. This includes recycling by-products and waste materials, optimizing packaging to reduce material use, and finding innovative ways to utilize surplus food.

Energy Management: Improving energy efficiency and transitioning to renewable energy sources can significantly reduce the carbon footprint of food processing operations. Technologies like energy-efficient equipment, solar panels, and biomass energy can be employed.

Transportation and Logistics: Optimizing transportation routes, reducing food miles, and using efficient packaging can lower greenhouse gas emissions associated with distribution. Cold chain management would play is crucial role to reduce food spoilage and waste.

Environmental Impact: Implementing measures to minimize air and water pollution, as well as reducing greenhouse gas emissions, helps mitigate the environmental impact of food processing operations.

Consumer Education and Transparency: Educating consumers about sustainable food choices and transparently communicating the sustainability efforts of food processors can foster greater awareness and support for sustainable practices.

Overall, integrating sustainability into the food processing industry is not only crucial for mitigating environmental impact but also for ensuring long-term economic viability and meeting the expectations of consumers increasingly concerned about sustainability issues. It requires collaboration across the supply chain, investment in technology and innovation, and a commitment to continuous improvement in sustainability practices.

6.4. Research and Development

For the food processing industry to flourish and achieving a vision of increasing the processing levels, it is pertinent to have continuous flow of raw materials. The focus needs to be on shifting cropping patterns to processable varieties of horticulture produce and improving productivity levels for longer availability for processing. This needs to be supported by Research on developing processable varieties suitable to the Indian climate. Research on optimising production (Mango harvest cycle is 60 days for India, vs 120 days for Peru and 180 days for Thailand; meanwhile for mango, average productivity for India is 6 MT/Ha compared to 10.9 MT/ Ha of Indonesia and 16.8 MT/Ha of Brazil) needs to be emphasized.

There needs to be awareness regarding the benefits for a farmer for growing processable varieties, including better price realisation. This could be enabled by a price discovery platform for perishables, backed by strong quality parameters and concurrent assessing infrastructure at markets.

The food processing industry needs to continuously upgrade in terms of product and process development, adoption of efficient technologies, improved packaging in line with environmental impact, and development of new products & value addition to remain relevant and competitive.

A dedicated platform/set up can be created for exchange of best practices, technology transfer, innovation for indigenous processing machinery/processing lines.

6.5. Integrating with Farmers Producers Organization (FPO)

India has the legacy of farmer collectives that have played an important role in the evolution of the agriculture and food sectors. Cooperatives in sugarcane, dairy, women led self-help groups in primary processing and non-farm rural sector, among others are notable examples. The farmer collectives also play an instrumental role in overcoming the scale barriers posed by the larger number of small and marginal farmers (operating on less than 2 hectares of land on average) who account for more than 85 percent of the total farmers.

Currently, FPOs are largely engaged in input retail and provide basic value chain services such as grading, sorting, aggregation, and market linkages. Enhanced role of FPOs in promoting value addition at the farmer level can be effective in addressing post-harvest losses as well as creating better income opportunities for the farmers. It also provides a sourcing opportunity for the private sector.

A production cluster-based hub and spoke model can be looked at for creating enhanced value addition opportunities at FPO level. At the spokes, aggregation, and primary value addition such as sorting, grading will be undertaken. At the hub, the infrastructure for processing, storage, and logistics will be created to undertake secondary processing, packaging and distribution.

Under this model, interoperability between FPOs can be explored to leverage economies of scale, and comparative advantage of the FPOs. For example, in a cluster with 3 FPOs, one of the FPOs can engage in aggregation, the other in processing and the third in marketing.

The private sector can help enable the FPOs to undertake value addition by supporting the package of practices as well as access to markets.

a. Market access – Diversified market access for value added products including B2B, B2C, and D2C through physical and online markets.

b. Input and advisory services – Agri inputs and advisory services related to agronomy practices.

c. Product development – Trainings and demonstrations on product development based on available raw materials.

d. Traceability and certification – Services related to traceability and certification to ensure transparency, quality control, compliance with industry standards, and build consumer trust.

e. Technology support – Pre and post-harvest technologies in improving the quality of raw materials as well as technologies aimed at quality and safety of value-added products.

The food processors in turn gain the benefit of supply lines with desired quality and quantity. This creates a win-win solution for both parties and also will boost growth in food processing sector.

6.6. Enabling access to credit

The Reserve Bank of India vide its circular (RBI/2017-18/175 DCBR.BPD (PCB). Cir. No.07/09.09.002/2017-18) dated 10th May 2018 while issuing the Revised guidelines on lending to Priority Sector for Primary (Urban) Co-operative Banks (UCBs) mentioned that Bank loans to food and agro processing units will form part of agriculture. A separate allocation of 10% to food processing within the 40% quota for priority sector (like the compulsion on Banks to lend a minimum 18% of total credit to agriculture); and removal of the cap of Rs 100 crores per borrower for being classified as priority sector would further help the industry to flourish.

6.7. Promoting export competitiveness

With India being the second largest producer of food, it is well placed to feed the world's population. With the emergence of new markets and technologies, the food processing sector in India has extended its scope from preservation to high value-added products like ready to eat food, beverages, processed and frozen fruit and vegetable products, marine and meat products, etc. An enabling policy environment for easy access to global markets would help the industry achieve its full potential.

The RODTEP rates that have been notified by DGFT are less than the earlier MEIS rates that were prescribed for the various food processing items, and do not provide for various costs, incurred by an exporter, thus reducing the price competitiveness, globally. It is suggested that the RoDTEP rates for food and agri products be benchmarked appropriately to provide for the cost of exports and ensure global competitiveness of the food processing sector.

Interest Equalization Scheme benefit to the Exporters. The exports by the food processing industries are supported with the initiatives such as the Interest Subvention scheme, specifically RBI has been providing Interest Equalization Scheme benefit to the Exporters, also referred to as Interest Subvention Scheme. Through this Scheme, the MSME sector enjoyed the interest benefit of 5% on all items and other Merchant & Manufacturer exporters 3% over the interest rate charged by the Banks, on the specified items. The last such benefit expired on 30th Sept'21.

However, RBI vide its notification dated 8th March'22 (RBI/ 2021-22/180), has further extended the scheme, with 2 key modifications:

- Interest benefit has been curtailed to 3% for MSME (earlier 5%) and to 2% for others (earlier 3%).
- The extended scheme (i.e., from 1st October'21 till 31st March'24) will not be available to those beneficiaries who are availing the benefit under any Production Linked Incentive (PLI) scheme of the government.

These amendments would reduce the competitiveness of the Indian Exports by enhancing the cost of export credit. Also, it is to be noted that the benefit under PLI Scheme is towards the investment (capital expenditure) made by any industry, which provides an impetus to the growth of the food processing sector.

Tariff and Non-Tariff Negotiations: Government to help negotiate for tariff equalization and non-tariff barriers in target export countries towards making Indian products price competitive and thus help gain market share.

Annexure

Annexure-1

HS Code	*Product Description*
8013220	Cashew kernel, whole
20081910	Cashew Nuts Roasted, Salted or Roasted And Salted (Including Mixtures) (Excluding Ground-Nuts), Prepared/ Preserved, Whether Or Not Containing Added Sugar Other Sweetening Matter Or Spirit, Not Elsewhere Specified Or Included
8013100	Cashew Nuts Fresh/Dried in Shell
13021930	Purified and distilled Cashew shell liquid (CNSL), Cardanol
8013210	Cashew kernel, broken
13021920	Cashew shell liquid (CNSL), crude
8013290	Other Cashew kernel

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Confederation of Indian Industry

The Confederation of Indian Industry (CII) works to create and sustain an environment conducive to the development of India, partnering Industry, Government and civil society, through advisory and consultative processes.

For more than 125 years, CII has been engaged in shaping India's development journey and works proactively on transforming Indian Industry's engagement in national development. With its extensive network across the country and the world, CII serves as a reference point for Indian industry and the international business community.

In the journey of India's economic resurgence, CII facilitates the multifaceted contributions of the Indian Industry, charting a path towards a prosperous and sustainable future. With this backdrop, CII has identified "Globally Competitive India: Partnerships for Sustainable and Inclusive Growth" as its Theme for 2024-25, prioritizing 5 key pillars. During this year, it would align its policy recommendations, initiatives, and activities with this overarching framework to facilitate strategic actions for driving India's global competitiveness and growth through a robust and resilient Indian Industry.

FACE
CII-Jubilant Bhartia Food and Agriculture Centre of Excellence

FACE is CII's Centre of Excellence dedicated to building efficiencies across the agricultural value chain from farm to fork. FACE is charged with the mission of improving competitiveness of India' agriculture and food sector by catalyzing innovation, building capacity and enhancing productivity across the value chain. FACE works with farmers, companies, development institutions and the government to

- Improve on and off-farm productivity through the dissemination of best practices and technological innovation
- Invest in capacity building initiatives and skill development for supply chain participants across the value chain
- Strengthen linkages across the value chain through market access initiatives, thereby reducing losses and increasing farmer incomes

FACE's service portfolio comprises commodity specific value chain assessments and supply chain advisory services for food and agri businesses, training and consulting services in the area of food safety, and sectoral research across different market segments. FACE also works on projects in PPP mode, to develop business models that are scalable and replicable across geographies.

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