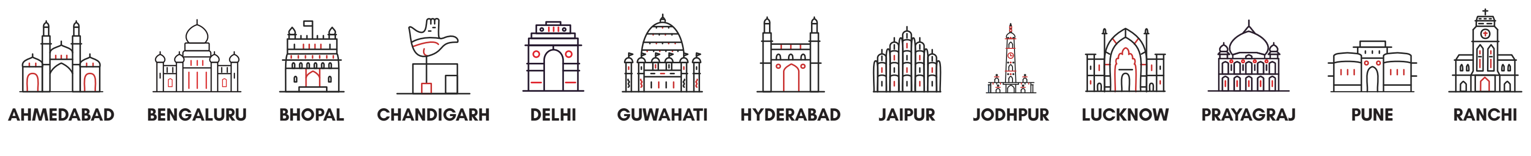
UPDATED VALUE ADDITION MATERIAL 2024

INDIAN ECONOMY

FOOD PROCESSING AND RELATED INDUSTRIES IN INDIA–SCOPE AND SIGNIFICANCE, LOCATION, UPSTREAM AND DOWNSTREAM REQUIREMENTS, SUPPLY CHAIN MANAGEMENT



Student Notes:

FOOD PROCESSING AND RELATED INDUSTRIES IN INDIA – SCOPE AND SIGNIFICANCE, LOCATION, UPSTREAM AND DOWNSTREAM REQUIREMENTS, SUPPLY CHAIN MANAGEMENT

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Student Notes:

1. Food Processing Industry

The food processing industry involves the transformation of raw agricultural products into consumable food items through various physical, chemical, and mechanical processes. This sector plays a crucial role in enhancing the shelf life, safety, and quality of food, thus meeting the demands of a growing global population.

	Primary Processing:	Secondary Processing:	Tertiary Processing:
Activities:	Cleaning, grading, and milling of raw food items such as grains, fruits, and vegetables.	Combining raw ingredients to create food products like bread, sauces, and snacks.	Further refining of secondary processed foods to produce packaged and convenience foods.
Output:	Basic food ingredients like flour, sugar, and fruit juices.	Ready-to-cook or ready-to-eat food items.	Frozen meals, canned goods, and instant foods.

Why Food Processing Industry?

The Food Processing Industry all over the world provides vital linkages between the two important pillars of the economy- **agriculture and Industry**. Thus, it has a direct impact on the lives of the people as well as the environment. The significance of FPI can be understood through the following points:

- **Reducing food wastage**: By utilizing surplus or imperfect produce, food processing helps reduce food wastage, contributing to sustainable agricultural practices and resource conservation. UN estimates that more than **one-third of food** is wasted globally. Similarly, NITI Aayog estimated annual post-harvest losses of close to **Rs. 90,000 crore in India**.
- **Reduce malnutrition**: Fortification of processed foods with vitamins and minerals raises the nutrition levels of the population.
- **Preservation:** Food processing techniques such as canning, freezing, and dehydration help in preserving perishable foods for extended periods and prevent the spoilage due to fungus, bacteria and pests.
- **Employment generation**: The FPI sector provides direct and indirect employment opportunities as it is labor as well as technology-intensive sector.
- **Increasing farmer income**: As the demand for processed food increases, so will the demand for raw farm materials, and thus the income of the farmers will increase.
- **Enhanced Food Safety**: Food processing involves various safety measures like pasteurization and sterilization, which eliminate or reduce harmful microorganisms, ensuring food safety and minimizing the risk of foodborne illnesses.
- **Crop Diversification**: With a growing market, farmers will be incentivized to grow a variety of crops, practice mixed farming etc.

2. Evolution of the Food Processing Sector in India

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Evolution of India's Agriculture and Food Processing Sector

Before 1960s

Polices were not directed ot words Agriculture: More focus on Industry sector (esp. capital goods) though 48% of India's GDP was from agriculture in 1950-51. The need to create a self-reliant and diversified industry sector motivated planners to adopt a import substitution strategy.

But, in the early 1960s, the GDP growth was only 3.9% against the expected 5%. But population growth was 2.3% against the expected 1.4%. As a result food security of India worsened as India imported cereals worth 28% of its export earnings.

1960-1990

Focus on Agriculture: Main objectives were self-sifficiency in food grains, reasonable prices for the farmers and affordable prices for the consumers (epecially the poor)

Green Revolution: Introduction of high-yielding variety of rice and wheat, Provision of irrigation facilities and fertilizers and Minimum Support Prices for the crops Creation of buffer stock for food and strengthening of the Public Distribution System.

Green revolutuion was successful in bringing the imports to 1.9% of the total export earnings.

Land Ceiling Act-1972: To provide lands to the landless farmers. Celing on the land holding by the farmers.

Restriction on exports: Agricultural goods were restricted from being exported. Also, the prevailing exchange rates did not favour exports.

1991-to date

Economic Reforms: Agricultural sector was ignored. Industry-first approach, focusing on removal of industrial licensing, removal of import licensing from all manufactured and capital goods, tariff reductions and relaxation of rules for foreign investment.

However, post-2000, government focused on the food processing industry 100% FDI is allowed automatically in food processing sector.

No industrial license required to start the industry except for a few items like alcohol, beer etc.

Export Promotion: Food parks and export zone were promoted which provides benefits like duty free imports, profits from export sales are exempt from corporate taxes etc.

Food processing industry in nascent stage

Key Conclusions from the evolution of Agro Processing Industry in India

Food Crisis and Green Revolution:

Food crisis in India during 1960s forced the government to adopt Green revolution which helped in self-sufficiency in food.

Focus on improving the poorer sections of the society:

To improve the livelihood of the poorer sections of the society, land ceiling act was enforced during 1972.

The primary aim is to provide land to landless farmers. It also limits the area of land held by a farmer (limited to 17 ha - varies in different states)

Growth of Food Processing Industry

Focus on Food processing industry after 1991:

After the economic reforms, government focused on improving the food processing industry in India.

Allowance of 100% FDI in food processing industry, export promotion incentives and other schemes to attract investments.

However, investment in this sector has been very low in India. The government has identified food and agro processing industry as one of the "sunrice" sectors that has high potential for domestic demand and export markets.

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3. Location of food processing industries in India

There are estimated 25-lakh unorganized and unregistered micro foods processing enterprises in the country, With 7% of investment in plant & machinery, the unorganized enterprises contribute of 74.3% of employment (a third of which are **women**), **10% of output and 27% of value addition** in the sector. Nearly 66 per cent of these units are located in rural areas and about 80 per cent of them are family-based enterprises.

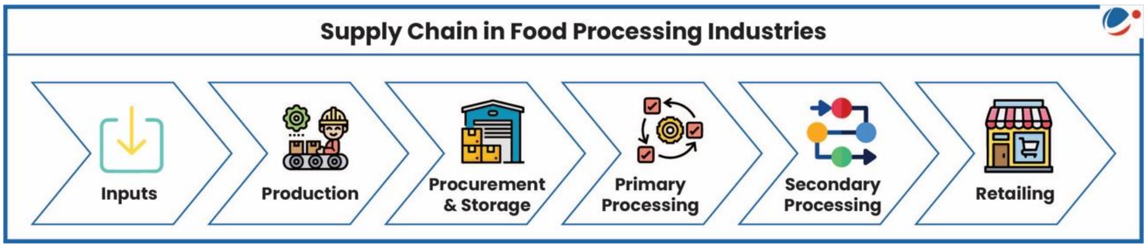
The **organized sector** with nearly 40,000 units accounts for 93% of the plant & machinery in the sector, in value terms. This segment accounts for **26% of employment** and contributes around **90% of output and 72% GVA**.

Most of the food processing factories are concentrated in the **coastal states** due to accessibility to marine food processing. Major coastal states include: Andhra Pradesh, Maharashtra, Karnataka, Gujarat, West Bengal etc. Major non-coastal states include: UP, Punjab, Haryana etc.

4. Supply Chain of the Food Processing Sector

A *supply chain* is a network between suppliers (farmers) of raw material, company (food processor) and distribution network to market the finished products. *Supply chain* represents the steps it takes to get the product or service to the customer.

The different stages of processing of manufactured food products are as follows:



4.1. Upstream and Downstream Requirements

Upstream operations: It refers to the initial stages of the supply chain, where raw materials are sourced, acquired and transported to manufacturing facilities. This stage involves activities such as supplier selection, procurement and inventory management. Efficient upstream operations play a vital role in ensuring a continuous and reliable supply of raw materials.

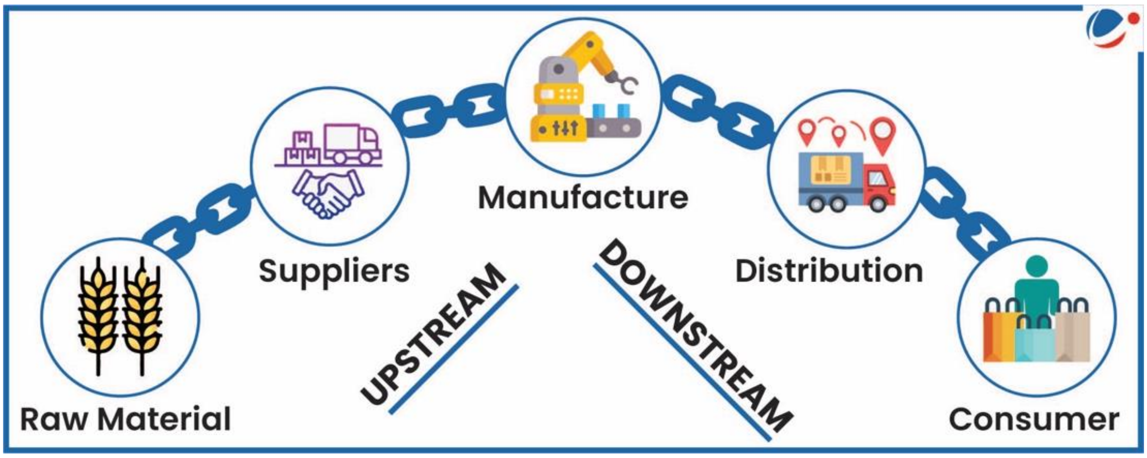
Upstream requirements include:

- Accessibility to raw materials.
- Modern extraction techniques.
- Good linkages with farmers.
- Storage facilities for raw materials like Grains, Meat, and Fish.
- Quality testing facilities.
- Transport facilities.
- Work force

Downstream operations: It encompass the final stages of the supply chain, where finished products are distributed to customers. This stage involves activities such as warehousing, transportation and order fulfillment. Efficient downstream operations are crucial for maintaining timely product delivery, customer satisfaction and a competitive edge in the market.

Downstream requirements include:

- Latest processing techniques.
- Latest processing machinery.
- Quality testing facilities.
- Organized retail stores for faster distribution.
- Work force.

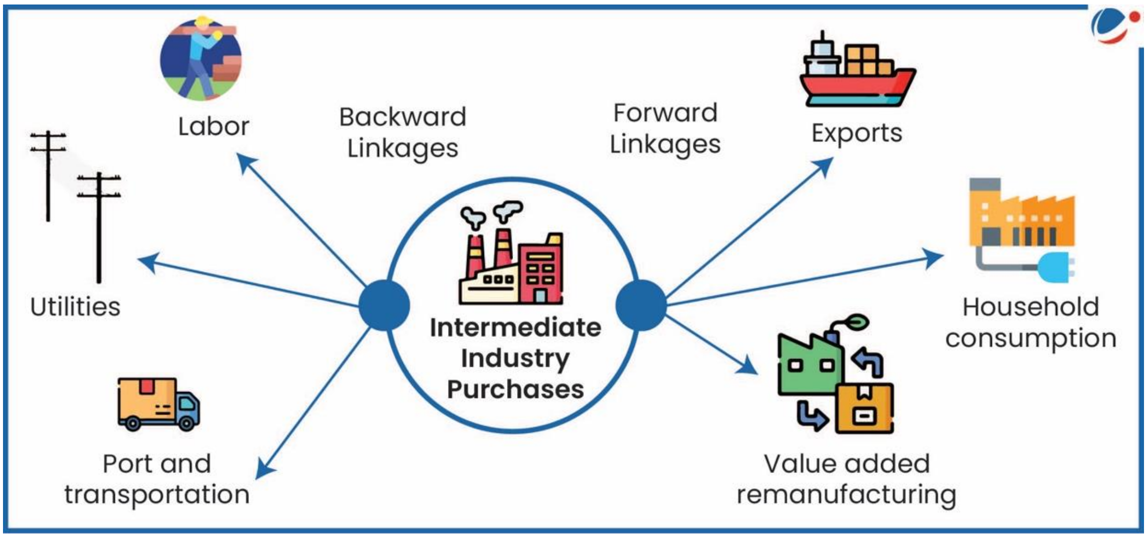


4.2. Backward and Forward Linkages

Backward Linkage: It means the connectivity of the FPIs with sources of raw material supply. For example, supply of raw material like tomatoes to a ketchup manufacturer.

Forward Linkage: It means the connectivity of FPIs with the markets through distribution network comprising of physical infra like storages, road and rail network etc.

Sideways Linkage: Sideways linkages are mostly derived from the use of by-products and waste products of the main base industrial activity. E.g.- Many food processing industries using agricultural raw materials produce waste that can be used further in production of fuel, bio-fuels, paper pulp and fertilizer.



Significance of Linkages:

For farmers:

- It helps farmers fetch remunerative return for their produce especially the marginal and medium farmers.
- It encourages and enables farmers to grow products of appropriate quality.

For consumers:

- It ensures timely delivery of food products to the consumers.

For Industry:

- It helps to reduce food wastage especially of perishable products like fruits, vegetables, dairy products etc.

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- High quality products and better infrastructure results in cost saving and enhanced efficiency.
- These links provide a level playing field for all stakeholders and aid in facing competition.
- Helps to improve hygiene and food safety standards leading to greater acceptability of processed food domestically and in international market.

Existing Challenges in establishing robust linkages:

- Small and dispersed marketable surplus due to fragmented holdings.
- High seasonality of raw material production.
- Large number of intermediaries.
- Poor infrastructure facilities like cold storage, transport facilities, electricity etc.
- Industry is highly fragmented and is dominated by the unorganized sector.
- Substandard levels of processing industries.
- Inadequacy of information with farmers and small processors.
- Multiplicity of legislation leads to contradictions in specifications, conflicting approach, lack of co-ordination and administrative delays.
- Under developed food testing network.

5. Scope and Significance of the Food Processing Sector in India

With India moving from a position of scarcity to surplus in terms of food production, the opportunities for increasing food processing levels are innumerable.

The scope can be gauged from the following:

- The Food Processing sector constituted nearly 10.54 per cent and 11.57 per cent of GVA in Manufacturing and Agriculture sector respectively in 2020-21 (at 2011-12 prices).
- India is a country with a population of over 1.4 billion. With rising middle class having a considerable disposable income, the domestic market offers significant demand opportunities.
- The Confederation of Indian Industry (CII) estimates that this sector has the potential to attract as much as **US $33 billion** of investment over the next 10 years and also to generate employment of **nine million person-days.**
- India is one of the largest food producing countries in the world (refer to the infographics). It presents huge opportunity to the FP sector.

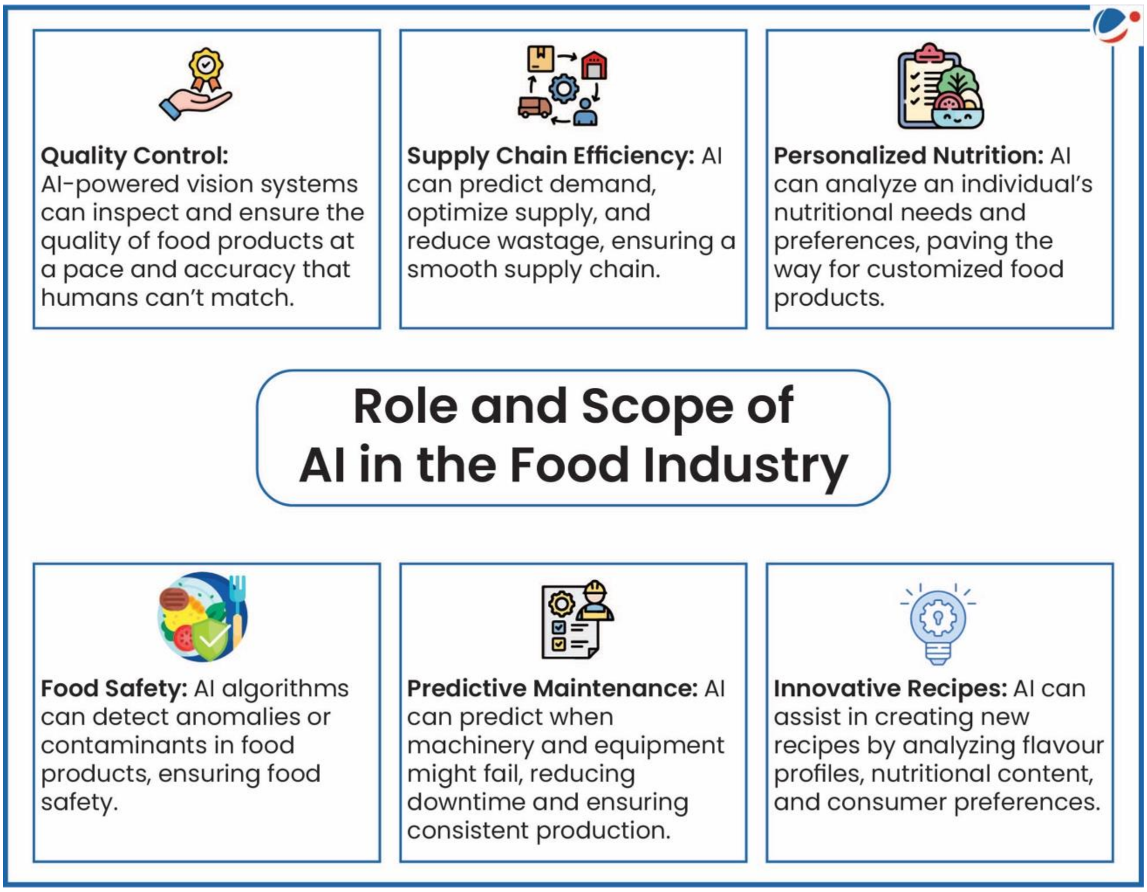
6. Potential of Processed Food Sector in India

The food processing market in India is a sunrise Industry with high potential for growth, which can be witnessed through following:

- **Demand:** With a population of more than 1.34billion individuals and food constituting a major part of the consumer's budget, this sector has huge growth potential. sIndia's consumer spending to grow to $6 Tn by 2030.
- **Export Competitiveness**: We have a comparative advantage in exports because the cost of raw materials is cheap in India as compared to other countries.
  - The share of processed food exports in agri-exports has increased substantially from 13.7% in 2014-15 to 25.6% in 2022-23.
- **Raw material:** Being an agrarian economy, there is sufficient supply of raw material in India. India has emerged as ***world leader in the production*** of a variety of fruits like mango, banana, guava, papaya, sapota, pomegranate, Lime & aonla and is the ***second largest producer*** of fruits and vegetables.
- **Favourable Government Initiatives**: The Indian government has been actively promoting the FPI through various schemes and policies such as such as Production Linked Incentive Scheme for Food Processing Industry (PLISFPI), Pradhan Mantri Formalisation of Micro Food Processing Enterprise (PM FME).

- **Scope for development:** While the industry is large in terms of size, it is still at a nascent stage in terms of development.
    - According to a Deloitte study on Level of Food Processing in India, processing levels were at 2.7% for vegetables, 4.5% for fruits, 15.4% for fishery, 21.1% for milk, and 34.2% for meat in 2020-21.

- **Employment generation:** It has the potential to generate non-farm employment, especially in rural areas. It would reduce disguise unemployment by providing productive employment opportunities. This industry is expected to add 9 million jobs by 2024.
- **Investments:** With 100 per cent FDI allowed into the sector through the automatic route by Government of India & ease of doing business, India's food processing sector is attracting global investors, which serve as a catalyst to boost agricultural income and employment.
    - The total FDI received in the food processing sector from Apr 2000 till Dec 2023 was $12.46 Bn which is 1.87% of the total FDI Equity inflow.
- **Forward-Backward Linkages:** FPI has potential to drive the rural economy as it brings about synergy between consumer, industry and agriculture. A well-developed food processing industry is expected to increase farm gate prices, reduce wastages, ensure value addition, promote crop diversification, generate employment opportunities as well as export earnings.
- **Food security:** FPI sector is capable of addressing critical issues of food security and providing wholesome, nutritious food to our people.



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7. Challenges faced by Food Processing Industry in India

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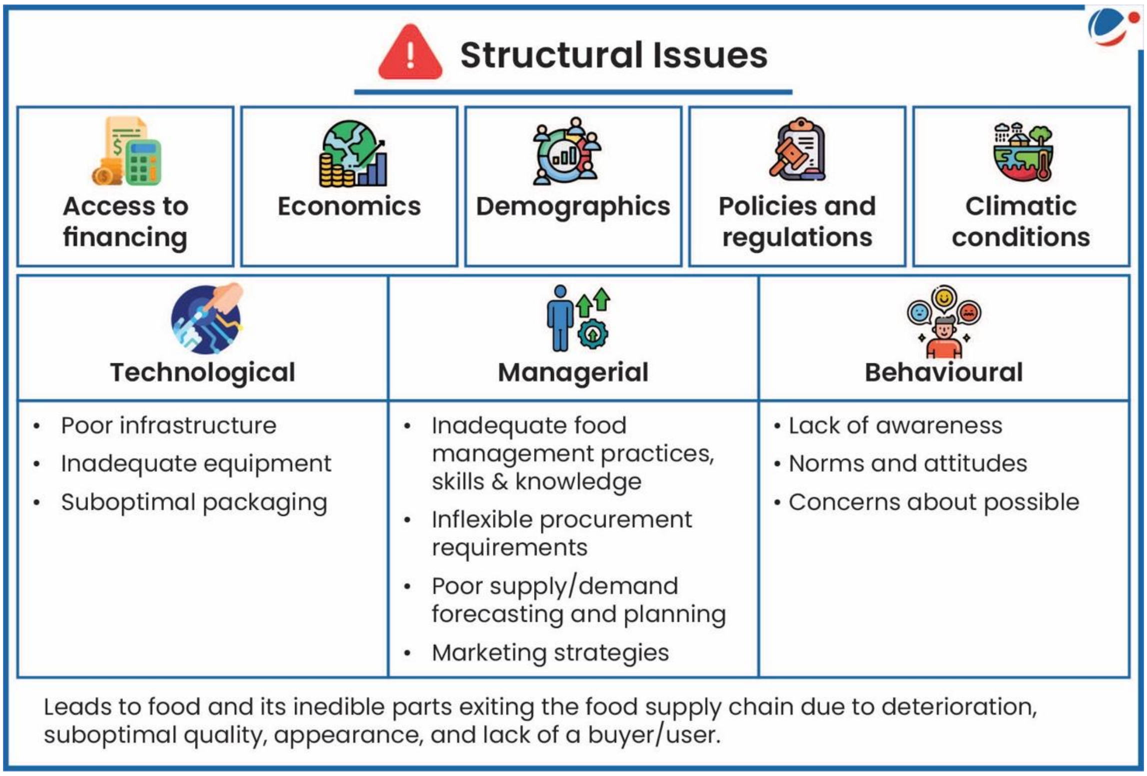


- **In formalization in Food Processing Industry:** The food processing industry has a high concentration of unorganized segments, representing almost 75% across all product categories. This causes the inefficiencies in the existing production system.
- **Lack of efficient supply chain infrastructure:** Inadequate expansion of processing and storage capacity commensurate with agriculture production have been identified as the main reasons for higher wastages, higher cost of production, lower value addition in food processing sector.
- **Lower Value addition**: India despite being one of the major producers of agri-commodities, the level of food processing and value addition continues to remain low affecting competitiveness & export performance and income of farmers.
- **Private Participation:**Cold Chain infrastructure involves heavy investment with long payback period which is beyond the capacity of individual food processors. High cost and inadequate credit impact investment from private players in food processing sector.
- **Inadequate linkage of processors, exporters and bulk purchasers with farmers**: Lack of coordination results in mismatch between the requirements of industry and supply of agri-produce by the farmers.
- **Formal Credit Facility:** Food processing units, largely operating in MSME segment, face problem in their access to bank credit due to seasonal and perishable nature of the commodities handled by these units.
- **Bureaucratic hurdles:** Multiple clearances are required for setting up of food processing units. The small processors are also required to go through the same processes as is applicable to larger units. Availing permission for Change in Land Use (CLU), environmental clearance, water and power connections are not only time consuming but also costly.
- **Labour Laws**: Food processing units are required to comply with labour laws in relation to lay-off, retrenchment and closure even though these units run seasonally which adversely affects the commercial viability of the processing units.
- **Marketing of processed food:** It is a major problem faced by food processors particularly for the micro and small processors. Given the scale of operation, individual units are unable to invest in marketing and branding impacting performance of the sector.

Student Notes:

- **Lack of awareness:** Processors face difficulty in availing benefits under schemes being implemented by different agencies of central and state governments Due to lack of awareness and absence of appropriate knowledge sharing & guidance forum.
- **Inadequate training:** Sector specific Entrepreneurship Development training and Incubation Services are weak inhibiting growth of the sector.
- **Seasonality Of operations-** These industries do not operate the entire year due to seasonality of agriculture. But in developed countries, industries run all year round due to technological advancement which enables storage of produce.
- **Co-ordination in Research**: A number of research institutes are undertaking R&D for product, process, and technology improvement & development, however,there is lack of coordinated action on research and information dissemination of research output to the industry.
- **Limited ability to control quality and safety:** The sheer number of players, especially in the large unorganized segment, involved in the food value-chain, makes implementation of quality and safety norms difficult. This has led to practices such as milk adulteration and use of carbide for fruit ripening etc.

8. Policy Initiatives and Measures taken by the Government

In order to facilitate and harness the growth potential of this sector, the government has initiated extensive reforms.

- Most of the processed food items have been exempted from the purview of licensing under the Industries (Development and regulation) Act, 1951, except items reserved for small-scale sector and alcoholic beverages.
- Food processing industries were included in the list of priority sector for bank lending in 1999.
- The Government of India has relaxed foreign direct investment (FDI) norms for the sector, allowing up to 100 per cent FDI in food product e-commerce through automatic route.
  - Automatic approval for foreign equity up to 100 per cent is available for most of the processed food items except alcohol, beer and those reserved for small-scale sector subject to certain conditions.
- Full repatriation of profits and capital has been allowed.
- Zero duty import of capital goods and raw material for 100 per cent export oriented units.
- Full duty exemption on all imports for units in export processing zones has been done.
- In the Interim Budget 2024-25, the Ministry of Food Processing Industries was allocated a total Budget of Rs. 3,290 crores (~US$ 396 million), an increase of ~13% over revised estimates for fiscal year 2024.
- **Food map of India** has been uploaded on the website of the ministry of FPI to indicate surplus and deficit areas. Further, **Investor's portal** has been launched by the ministry to promote investment in FPI to give information about potential areas.
- **APMC Reforms** have been brought for promotion of contract farming which subsequently will boost supply of raw materials to the FPIs.
  - **Agriculture Export Zones** are being established since 2001. They will function similar to Special Economic Zones (SEZs) but only for agriculture products. 16 AEZs have been established with an objective to export agri-products. Tax rebates are more in AEZs as compared to in Mega Food Parks.
  - In all 60 Agri Export Zones (AEZ) were notified by the Government till 2004 - 05.
- The Food Safety and Standards Authority of India (FSSAI) is investing to strengthen the food testing infrastructure in India, by upgrading 59 existing food testing laboratories and setting up 62 new mobile testing labs across the country.
  - FSSAI under the Ministry of Health and Family Welfare has issued the Food Safety and Standards (Food Product Standards and Food Additives) Regulations, 2011 and the Food Safety and Standards (Contaminants, Toxins and Residues) Regulations, 2011 which prescribe the quality and safety standards respectively for food products.

Student Notes:

- Also, it has issued new rules for importing products, to address concerns over the entry of sub-standard items and simplify the process by setting shelf-life norms and relaxing labeling guidelines.

- The Indian Council for Fertilizer and Nutrient Research (ICFNR) has adopted international best practices for research in fertilizer sector, which will enable farmers to get good quality fertilizers at affordable rates and thereby achieve food security for the common man.

8.1. Schemes related to Food Processing Industries:

PM Kisan SAMPADA Yojana

It is a comprehensive package which will result in creation of modern infrastructure with efficient supply chain management from farm gate to retail outlet. It will not only provide a big boost to the growth of food processing sector in the country but also help in providing better returns to farmers and is a big step towards doubling of farmers income, creating huge employment opportunities especially in the rural areas, reducing wastage of agricultural produce, increasing the processing level and enhancing the export of the processed foods.

The following schemes will be implemented under PM Kisan SAMPADA Yojana:

- Mega Food Parks
- Integrated Cold Chain and Value Addition Infrastructure
- Creation / Expansion of Food Processing & Preservation Capacities
- Infrastructure for Agro-processing Clusters
- Creation of Backward and Forward Linkages
- Food Safety and Quality Assurance Infrastructure
- Human Resources and Institutions
- Operation Greens

The Agro Processing Cluster Scheme under PMKSY

It is aimed at developing modern infrastructure and common facilities to facilitate the establishment of food processing units based on a cluster approach. This involves connecting groups of producers/farmers with processors and markets through a well-equipped supply chain. Each agro-processing cluster includes Basic Enabling Infrastructure (such as roads, water supply, power supply, drainage, ETP) and Core Infrastructure/Common facilities (including warehouses, cold storages, IQF, tetra pack, sorting, grading) along with at least 5 food processing units requiring a minimum investment of Rs. 25 crore (-US$ 3 million). The units are established simultaneously with the creation of common infrastructure, requiring at least 10 acres of land arranged either through purchase or lease for a minimum of 50 years.

Integrated Cold Chain and Value Addition Infrastructure" Scheme under PMKSY

It was launched to establish uninterrupted cold chain facilities from farm to consumer, including pre-cooling, storage, and distribution. It encompasses various temperature-controlled storage, packing, and transportation facilities for diverse products like horticulture, dairy, and meat.

Operation Greens

In the Union Budget 2018-19, a new initiative called "Operation Greens" was introduced, modeled after "Operation Flood," with a budget of Rs. 500 crore (US$ 71.5 million). This scheme was launched to boost Farmer Producers Organizations (FPOs), agri-logistics, processing facilities, and professional management, focusing initially on Tomato, Onion, and Potato (TOP) value chains since November 2018.

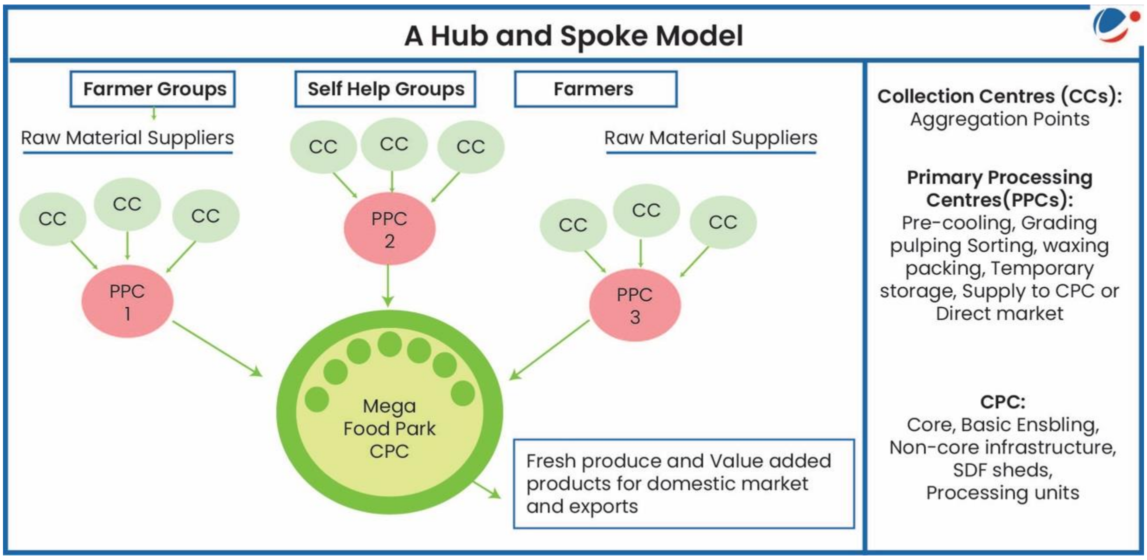
Student Notes:

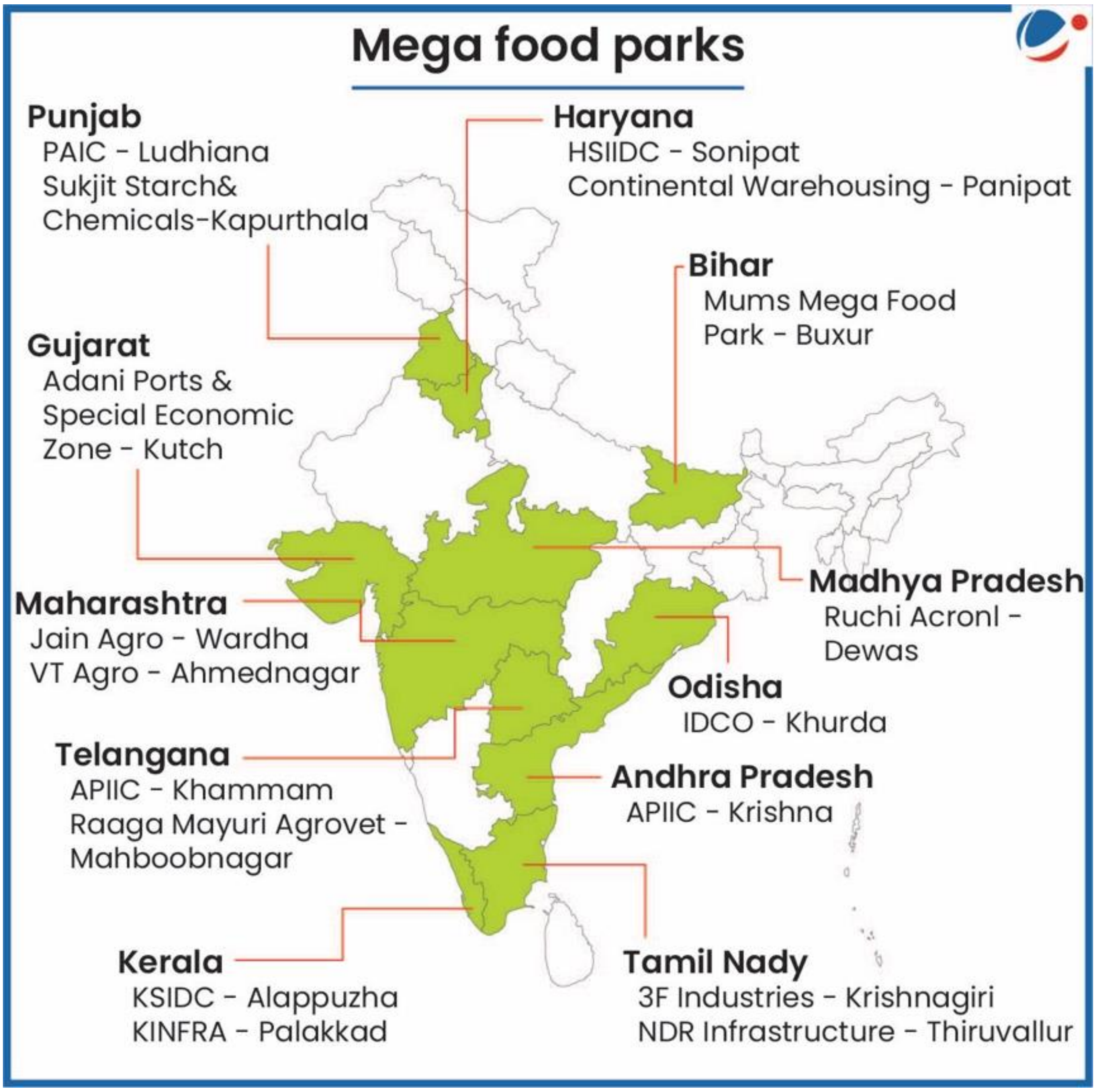
As part of the "Aatmanirbhar Bharat Package" to revive the economy post the COVID-19 supply chain disruptions, short-term measures under the scheme were extended from TOP crops to all fruits and vegetables (TOTAL). Furthermore, in the Union Budget 2021-22 speech, the coverage of long-term interventions, specifically Integrated Value Chain Development Projects initially targeting TOP crops, was expanded to include 22 perishable crops.

Mega Food Park Scheme:

- **Mega Food Parks Scheme was** launched by the government in 2008. It provides financial assistance up to 50 crores to setup modern infrastructure facilities for **food** processing called **Mega Food Parks.** The primary objective of the Scheme is to provide modern infrastructure facilities for the food processing along the value chain from the farm to the market with a cluster based approach based on a hub and spokes model.
- **It has 3 layers:**
  - At the centre, there is **central processing centre (CPC)** which is 80-100 acres. From here the value-added product will either go to the domestic market or for exports.
  - Around CPC, there are **PPC (Primary Processing Centre)** where works like sorting, grading, pre-cooling, packaging etc. are done.
  - Around PPC, **CCs (Collection centres)** are there working as aggregation and storage centres which collect from farmers, middle-men, mandis etc.
- The Mega Food Park project is implemented by a Special Purpose Vehicle (SPV), which is a Body Corporate, registered under the Companies Act. The government has sanctioned 41 food parks funded under the Mega Food Parks Scheme, 24 are operational and 17 are under implementation as of Dec 2023.

  However, the Mega Food Park Scheme has, however, been discontinued w.e.f. 01.04.2021 with provision for committed liabilities only.





Scheme for formalization of Micro Food Processing Enterprises

The Union Cabinet has given its approval to a new Centrally Sponsored Scheme – "Scheme for Formalization of Micro food processing Enterprises" for the Unorganized Sector on All India basis. The Union Cabinet has sanctioned an outlay of Rs.10000 crore.

Student Notes:

- **The objective of the scheme is to**
  - Support the creation of global food manufacturing champions;
  - Promote Indian brands of food products; I
  - Increase employment opportunities for off-farm jobs;
  - Ensure remunerative prices of farm produce and higher income to farmers.
- **Features of the scheme**
  - Expenditure to be shared by the Government of India and States at 60:40.
  - 2 lakhs of micro-enterprises are to be assisted with credit linked subsidy.
  - The scheme will be implemented over a 5 year period from 2020-21 to 2024-25.
  - It will follow a cluster approach.
  - It will have special focus on perishables.
- **Support for Individual micro-units:**
  - Micro enterprises will get credit-linked subsidy @ 35% of the eligible project cost with a ceiling of Rs.10 lakh.
  - The beneficiary contribution will be a minimum of 10% and balance from the loan.
  - On-site skill training & Handholding for DPR and technical up-gradation.
- **Implementation strategy:**
  - Seed capital of Rs. 4 lakh per SHG will be given for the loan to members for working capital and small tools.
  - Grant will be provided to FPOs for backward/forward linkages, common infrastructure, packaging, marketing & branding.
- **Administrative and Implementation Mechanisms**
  - The Scheme would be monitored at Centre by an Inter-Ministerial Empowered Committee (IMEC) under the Chairmanship of Minister, FPI.
  - A State/ UT Level Committee (SLC) chaired by the Chief Secretary will monitor and sanction/ recommend proposals for expansion of micro-units and setting up of new units by the SHGs/ FPOs/ Cooperatives.
  - The States/ UTs will prepare Annual Action Plans covering various activities for implementation of the scheme, which will be approved by the Government of India.
  - A third-party evaluation and mid-term review mechanism would be built in the programme.
  - The State/ UT Government will notify a Nodal Department and Agency for implementation of the Scheme.
- **Establishment of a National Portal & MIS**
  - A National level portal would be set-up wherein the applicants/ individual enterprise could apply to participate in the Scheme.
  - All the scheme activities would be undertaken on the National portal.
- **Benefits catered by the Scheme**
  - Nearly eight lakh micro-enterprises will benefit through access to information, better exposure and formalization.
  - Credit linked subsidy support and hand-holding will be extended to 2 lakh micro-enterprises for expansion and up-gradation.
  - It will enable them to formalize, grow and become competitive.
  - The project is likely to generate nine lakh skilled and semi-skilled jobs.
  - The scheme envisages increased access to credit by existing micro food processing entrepreneurs, women entrepreneurs and entrepreneurs in the Aspirational Districts.
  - Better integration with organized markets.
  - Increased access to common services like sorting, grading, processing, packaging, storage etc.

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Gram Samriddhi Yojna:

- It aims to bolster the unorganized food processing sector concentrated in rural areas. About 66% of unorganized food processing units are in rural areas and of these, 80% were family run.
- The Rs. 3,000 crore scheme funded by the World Bank and the centre will help cottage industry, farmer producers' organization and individual food processors to increase capacity, upgrade technology besides skill improvement, entrepreneurship development and strengthening the farm-to market supply chain.

Scheme for Cold Chain, Value Addition and Preservation Infrastructure:

The objective of the scheme is to facilitate creation of integrated cold chain and preservation infrastructure facilities without any break from farm to consumer. It intends to address the shortage of cold storage capacity. The scheme mentions three types of facilities to be created such as:

- Minimal processing centre at the farm gate level having facilities like weighing, sorting, grading, pre-cooling, CA/MA storage, IQF and normal storage facilities
- Mobile pre- cooling vans and reefer trucks
- Distribution hubs having facilities such as multi-purpose cold stores, variable humidity stores, Quick Freezing and blast freezing etc.

Modernization of Abattoirs:

The objective is to modernize existing abattoirs or establish modern abattoirs promoting scientific and hygienic slaughtering, application of modern technology for waste management, better by product utilization, provision of chilling facility, retail cold chain management etc. under PPP mode with the involvement of local bodies (panchayats or municipalities) on build-own-operate/build-operate-transfer (BOT)/Joint venture (JV) basis.

Make In India:

As part of the Make in India campaign, food processing sector was identified as one of the 25 focus areas. Also, under Make in India campaign, 31 **Sector Skill Councils (SSCs**) were established by the government along with FICCI of which 1 is for FPI.

TRIFOOD Project:

Ministry of Tribal Affairs, Ministry of FPI along with TRIFED have initiated the project with aim to enhance the income of tribals through better utilization of and value addition to the Minor Forest Produce (MFP) collected by the tribal forest gatherers.

Food Processing Fund:

A special fund in the NABARD worth INR 2,000 crore, designated as the Food Processing Fund, was set up in the FY 2014-15 for providing affordable credit to food processing units in Mega & Designated Food Parks.

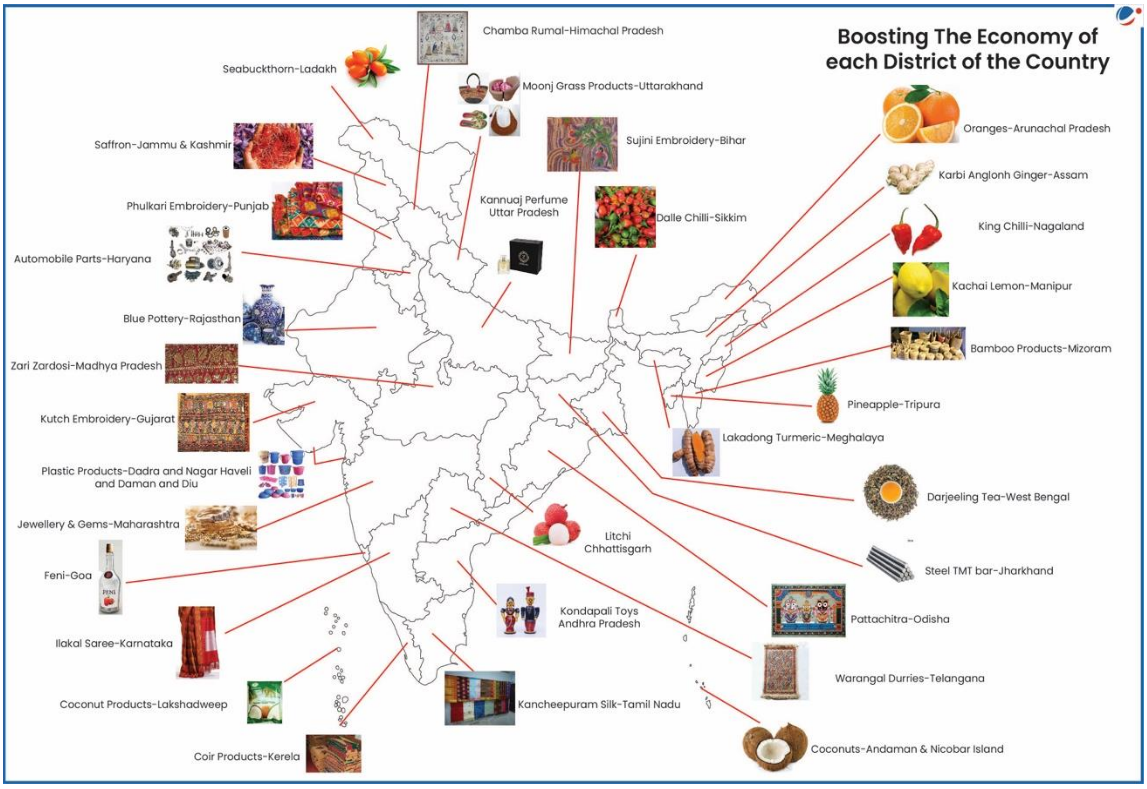
One District One Product (ODOP):

The scheme was launched by the Government of Uttar Pradesh to encourage and revive aboriginals' arts and craft products. It would help Micro, Small and Medium Enterprises (MSMEs) to produce and promote products that are unique in Uttar Pradesh. The programme aims to encourage more visibility and sale of indigenous and specialized products/crafts of Uttar Pradesh, generating employment at the district level.

The main objectives of the One District One Product Programme are as follows:

- Preservation and development of local crafts/skills and promotion of the art.
- Increase in the incomes and local employment (resulting in a decline in migration for employment).

- Improvement in product quality and skill development.
- Transforming the products in an artistic way (through packaging, branding).
- To connect the production with tourism (Live demo and sales outlet – gifts and souvenir).
- To resolve the issues of economic difference and regional imbalance.
- To take the concept of ODOP to national and international level after successful implementation at the State level.



Under this project, one particular product is selected from every district. The selected product under ODOP needs to be traditionally famous for its production and manufacturing from that particular district. For instance: Lucknow is famous for zari-zardozi and chikankari. Many of these products are GI-tagged, which means they are certified as being specific to that region.

The manufacturing process of a lot of these products is are being revived through modernization and publicization. Under the ODOP programme, artisans, production units and associations which are related to the selected products are promoted by lending loan, establishing Common Facility Centers, providing marketing assistance so these products can be popularized and employment can be generated at the district level.

Sub-schemes under the ODOP are:

- Common Facility Centre Scheme
- Marketing Development Assistance Scheme
- Finance Assistance Scheme (Margin Money Scheme)
- Skill Development Scheme.

8.2. Recent Developments

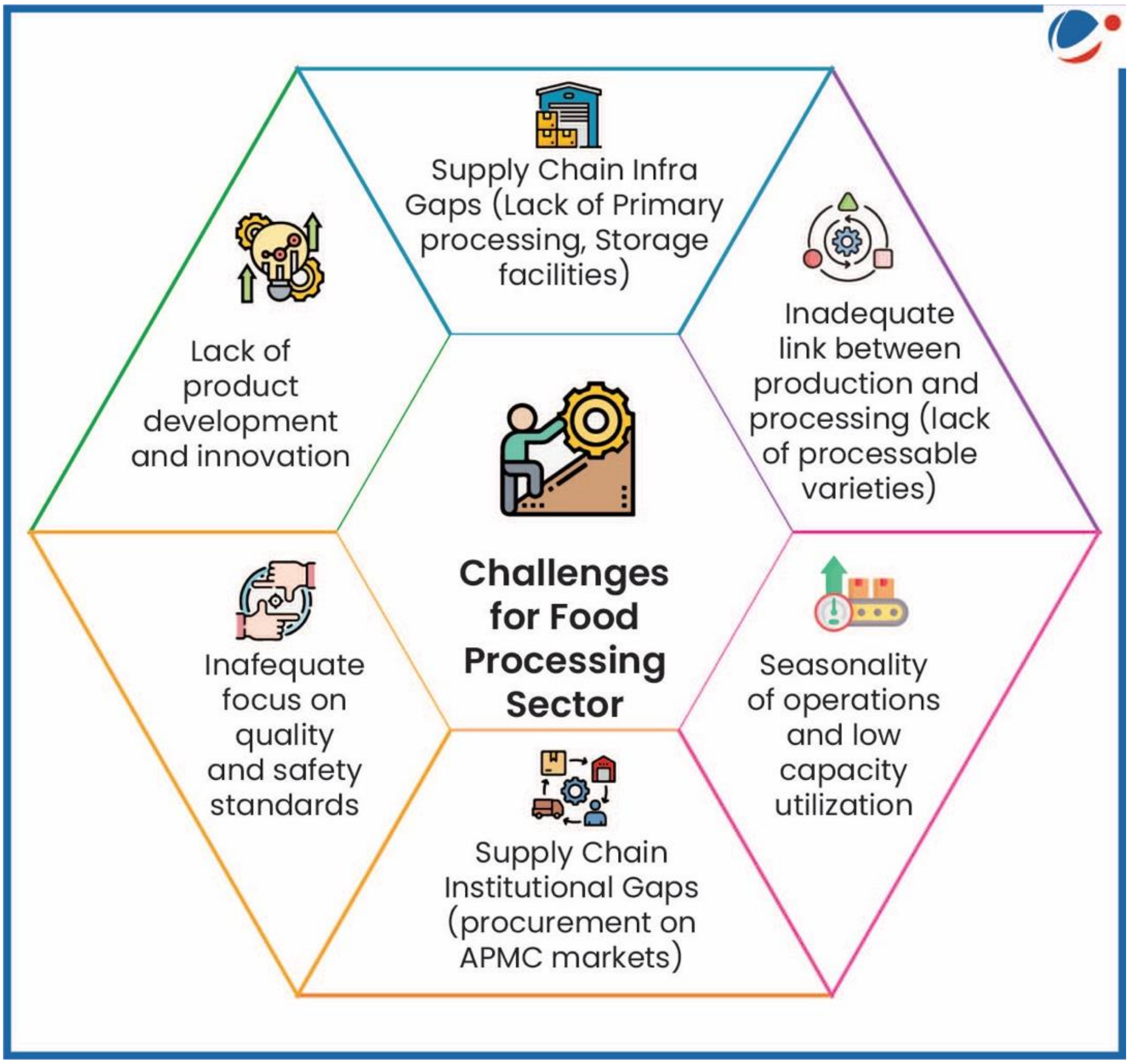
- The Ministry of Food Processing Industries hosted 'World Food India' event, in November 2023, in New Delhi. The event provided a distinctive platform to all the stakeholders in the food value chain including food processors, equipment manufacturers, producers, cold chain players, technology providers, logistics players, researchers, start-ups and innovators, food retailers etc. to engage and demonstrate their capabilities.
- The United Nation's General Assembly (UNGA) declared 2023 as the International Year of

Student Notes:

Millets. The Union Budget 2023-24 included a special focus on millet, highlighting the aspirations to make India a Global Hub for Millets (Shree Anna).

- During the Presidency of G20 summit, India had organized a two-day Global Millets Conference in March 2023 in New Delhi bringing together participants from more than 102 countries facilitating discourse on important issues related to millets, including its production, consumption, nutritional benefits, value chain development, market linkages, and research and development.
- The Indian Institute of Millets Research in Hyderabad was declared as a Centre of Excellence for sharing best practices, research, and technology at national and international level.
- In 2022, a Special Food Processing Fund of US$ 263 million (Rs. 2,000 crore) was set up with National Bank for Agriculture and Rural Development (NABARD) to provide affordable credit for investments in setting up units under Mega Food Parks (MFP) and Designated Food Parks (DFP).
- The Production Linked Incentive Scheme for Food Processing Industry (PLISFPI) was approved in March 2021, with a budget of US$ 1.3 billion (Rs. 10,900 crore) to be implemented from 2021-22 to 2026-27. It is aimed at incentivizing manufacturing, promoting innovative/organic SME products, and endorsing Indian brands internationally. Additionally, a PLI Scheme for Millet-based Products (PLISMBP) was launched in FY23 with an outlay of ~US$ 96 million (Rs. 800 crore).

8.3. Challenges that still remain despite Government Initiatives



Student Notes:

Student Notes:

The challenges for the food processing sector are diverse and demanding, and need to be addressed to boost FPI in India. A combination of uncontrollable and controllable factors has affected the growth of the sector and has acted as a hindrance in achieving its potential.

Uncontrollable factors:

- Fragmentation of land holdings which has resulted in lack of scale and has made investments in automation unviable;
- Regional climatic variations which impact the production;
- The constraints in land availability due to competing pressure from urbanization, constructions and industrialization.

Controllable factors: which can be addressed by intervention of Government and private enterprises.

- It includes issues of quality and quantity of raw produce,
- Low labor productivity with slow adoption of technology.
- Low levels of value addition and safety/quality of processed food etc.
- Lack of access to credit;
- Inconsistency in state and central polices, which requires both the Center and the State to work as one single cohesive unit.
- Lack of cold chain and storage- India has inadequate cold storage and transportation facilities. This results in severe loss of post-harvest perishable goods.
- Fragmented supply chain leading to inefficiencies and increased costs.
- Businesses find it difficult to navigate the complex web of licenses, regulations and permits.

Indian food-processing industry is poised for explosive growth driven by changing demographics, growing population and rapid urbanization along with increased government support. These factors will increase the demand for value added products and thus improve the prospects of food-processing industry in India.

The government's focus towards food processing industry as a priority sector will ensure policies to support investment in this sector and attract more FDI. India with its vast pool of natural resources and growing technical knowledge base has strong comparative advantages over other nations. According to CII estimates, food-processing sector has the potential of attracting US $33 billion of investment in 10 years and generate employment of 9 million person-days. The food processing sector in India is clearly an attractive sector for investment and offers significant growth potential to investors.

8.4. Suggestions and Way Forward

The need of the hour is to adopt an integrated approach to address the above mentioned tailbacks with a clear-cut focus on improving the quality and value of the output, reducing the cost of raw material for the processors, while improving the farmers' income levels.

To promote this sector, attempts are required to be made to promote farmer–producer interaction, provide appropriate tax incentives and holidays for setting up food processing industries, taking care of expenses on market promotion and ancillary activities.

Policy initiatives to plug supply side and infrastructure bottlenecks

- Foster development of backward linkages by evolving conducive regulatory framework for contract and corporate farming
- The North Eastern Region, the Hilly States (J&K, HP and Western UP), the Islands (A&N, Lakshadweep) areas in the country should be given special consideration as they are naturally conducive for FPIs. In this direction, **Zoram Mega Food Park**, Mizoram's 1st such park was set up by MoFPI.
- Encourage commodity clusters and intensive livestock rearing.

- Promote private sector participation with well-defined roles of the participants, risk sharing mechanisms, fiscal incentives and partnership models for creation of infrastructure for logistics, storage and processing.
- Encourage technology up gradation of existing facilities and investment in development of ancillary industries like research and development, packaging, food processing equipment manufacturing, food safety certifying agencies by extending fiscal incentives to investors.
- Enable better access to credit by augmenting current cap of Rs 10 crore investments in plant and machinery to qualify as Priority Sector Credit to accommodate the high cost technology adoption and scale enhancement.

Streamlining the regulatory structure

- Remove impediments of multiple departments and laws in seeking approvals by bringing them under a single window.
- Ensure uniform implementation of the APMC act to encourage private sector investment in infrastructure development.

Change in mindset - Orienting stakeholders towards 'demand and profit driven production'

Participants across the agri value- chain need to shift their focus from trying to market 'what is produced' to producing 'processable varieties and marketable products' meeting global quality standards and traceability requirements, duly adopting need based viable technologies and quality controls.**Human resource development-to meet increasing demand for skilled manpower**

- Stimulate industry, academia and government to put in combined efforts for development of specialized institutes and courses for providing training on managerial, safety and enforcements, technology and production, warehousing and distribution aspects.
- Encourage State Agricultural Universities to commence courses in food packaging, processing, bio-technology, information technology in agriculture and such allied fields.

Student Notes:

9. SWOT Analysis of the Food Processing Industry in India

Student Notes:

Strengths	Weaknesses	Opportunities	Threats
Round the year availability of raw materials. Social acceptability of food-processing sector. Support from the central government. Vast network of manufacturing facilities all over the country. Vast domestic market.	Requirement of high working capital. Low availability of new and reliable instruments & equipment. Inadequate automation w.r.t. information management. Remuneration is less attractive for talent in comparison to other disciplines. Inadequately developed linkages between R&D labs & industry.	Large crop & material base in the country. Integration of developments in contemporary technologies such as electronics, material science, computer, bio-technology. Opening of global markets may lead to export of India's developed technologies & generation of additional income & employment.	Competition from global players Loss of trained manpower to other industries & other professions due to better working conditions. Rapid developments & requirements of the industry may lead to fast obsolescence.

10. Previous Year UPSC Mains Questions

1. India needs to strengthen measures to promote the pink revolution in food industry for ensuring better nutrition and health. Critically elucidate the statement. **(2013)**
2. What are the impediments in marketing and supply chain management in developing the food processing industry in India? Can e-commerce help in overcoming this bottleneck? **(2015)**
3. What are the reasons for poor acceptance of cost effective small processing unit? How the food processing unit will be helpful to uplift the socio-economic status of poor farmers? **(2017)**
4. **How do subsidies affect the cropping pattern, crop diversity and economy of farmers? What is the significance of crop insurance, minimum support price and food processing for small and marginal farmers? (2017)**
5. Examine the role of supermarkets in supply chain management of fruits, vegetables and food items. How do they eliminate number of intermediaries? **(2018)**
6. Discuss the factors for localization of agro-based food processing industries of North-West India. **(2019)**
7. Elaborate the policy taken by the government of India to meet the challenges of the food processing sector. **(2019)**
8. Elaborate on the policy taken by the Government of India to meet the challenges of the food processing sector. (UPSC 2019)
9. What are the challenges and opportunities of food processing sector in the country? How can income of the farmers be substantially increased by encouraging food processing? (UPSC 2020)
10. Elaborate the scope and significance of the food processing industry in India. (UPSC 2022)

11. Previous Year Vision IAS GS Mains Test Series Questions

1. Highlight the potential, significance and challenges facing the food processing sector in India.

Approach:

- Start with a short note on the importance of the Food Processing Sector in general.
- Discuss the potential of Food Processing Industry in India and make use of facts and figures.
- Highlight its significance and present challenges facing this sector in India.
- Conclude with a short way forward.

Answer:

Student Notes:

The food processing sector offers a vital linkage between agriculture and industry. . With India moving from a position of scarcity to surplus in food production the prospects for increasing processing levels are enormous.

Potential of Food Processing Sector in India:

- **Sunrise industry:** Less than 10% of India's agri-output is processed and most of it is primary processing that offers lower value-addition. India's significant agricultural production strength, along with low levels of current processing offer huge opportunities for growth.
- **Promising growth pattern:** The sector grew at an Average Annual Growth Rate (AAGR) of around 8.5% from 2014-18 and constituted as much as around 9 per cent and 11 per cent of Gross Value Added in the Manufacturing and Agriculture sector respectively. Also, cheaper workforce availability can be effectively utilized to setup large low cost production bases for domestic and export markets.
- **Market composition:** India's large and growing market, rising income, changing consumption patterns due to urbanization, changes in the gender composition of workforce, growing household consumption (which is expected to double by 2020) etc. are likely to give boost to growth of this sector.
- **Increased Investments:** From 2014-19, FDI inflow into Indian food industry has been increasing steadily to the tune of USD 3.28 billion at a CAGR of more than 4%.

Significance of Food Processing Sector:

- United Nations estimates that 40% of production is wasted. Similarly, the NITI Aayog estimated annual post-harvest losses of close to Rs. 90,000 crore. Thus, food processing is also significant from the point of **reducing food waste**.
- With a growth rate of 10.35% in the 2010-17 period, this sector provides huge **employment generation potential** also.
- Owing to the labour intensive nature of the food processing industry, it has a higher **multiplier effect** on the overall economy.
- Moving up the value chain in the processed food sector is key to **doubling farmer's income by reducing food wastage; enhancing food exports and contributing to food security.**

Challenges facing the Food Processing Sector:

- There is a lack of **efficient supply chain infrastructure** and inadequate expansion of processing and storage capacity commensurate with agriculture production.
- Minimization of **losses in the perishable segment** requires **huge investment** with a long payback period in farm gate infrastructure, storage & cold chain infrastructure and expansion of processing capacities.
- Low level of food processing and value addition impacts our **competitiveness & export performance**.
- **Inadequate linkage** of processors, exporters and bulk purchasers with farmers results in **mismatch between industry requirements and supply of agri-produce by the farmers.**
- Inadequate and high cost of credit **fails to attract prospective entrepreneurs** in the food processing sector for investment.
- **Multiple permissions & clearances, inadequate marketing experience, tough labour laws, uniformity of standards** applicable to small and large units act as disincentives for smaller establishments.

- There is a lack of adequate **emphasis on food safety standards** along the food value chain to promote Good Hygiene Practice (GHP) and Good Manufacturing Practice (GMP).

To realize the potential of this sector, the Government of India has accorded it **'high priority' status under its Make in India initiative**. Furthermore, policy environment is being made conducive through efforts like relaxation of FDI norms, marketing reforms, and facilitation of infrastructure creation through schemes like **National Mission on Food Processing, Pradhan Mantri Kisan SAMPADA Yojana, Mega Food Parks Scheme, Agri export zones etc.** This shall go a long way in making India the 'Food Basket of the world'.

Student Notes:

2. Mega Food Parks (MFPs) were considered to be a game changer for the food processing sector in India, but their progress remains stunted. Discuss.

Approach:

- Introduce by briefly explaining the concept of Mega Food Parks (MFPs).
- Discuss in brief its failure.
- Mention the issues associated with it.
- Conclude with a way forward.

Answer:

Mega Food Parks involves setting up modern food processing units with well-established supply chain infrastructure including collection centers, primary processing centers, central processing centers, cold chain etc. They are established with the aim of providing a mechanism to link agricultural production to the market by bringing together farmers, processors and retailers.

They were considered to be a game-changer for the food processing sector in India, as:

- They would ensure **maximization of value addition, minimizing wastage, increasing farmers' income and creation of employment opportunities** by providing a platform for collaboration of different stakeholders.
- They would facilitate establishment of an **integrated value chain**, with food processing at the core and supported by requisite forward and backward linkages.

However, the scheme failed to yield desired results. Even after 13 years of its inception, only 37 food parks have been sanctioned and only 21 are operational. Further, 16 food parks are still under implementation. This is due to the following issues associated with MFPs:

- **Regulatory Issues:**
  - The regulations, which have to be met for a grant to be obtained, are extremely explicit on how these parks are to be set up and run. This has acted as a deterrent for multinationals like PepsiCo, which have their own models.
  - It initially required lead investors to partner with three or four other major players to set up parks. Corporates are not always keen on such partnerships.
  - Also, at least one of the investors in an SPV is required to have a background in the food processing industry, as well as 50 acres of land. The latter requirement brings its own problems, such as land acquisition or conversion to industrial use, which requires multiple approvals.
- **Difficulty in getting loans**: Promoters have faced difficulties in selling the new concept to banks and, as a result, have failed to secure loans to build the parks.
- **Delay in implementation:** This is due to the time taken to issue various statutory clearances by the State governments, changes in project components midway

through a revision in DPR and changes in shareholding pattern and bank approval thereon.

Other than above issues, the global economic slowdown has also resulted in stunted growth of Mega food parks. However, a seed fund has been created with NABARD to address the funding issues. To make it a success, the government should steer away from 'one size fits all strategy' to one that is more cognisant of specific requirements.

Student Notes:

3. *Food processing industry provides a vital link between the two pillars of the economy, i.e. agriculture and industry. In view of this, examine the constraints faced by the agri-food supply chain system in India. Suggest suitable solutions as well.*

Approach:

- Introduce by explaining the status and relevance of the food processing sector in India.
- Discuss how it provides opportunities to agriculture as well as industry.
- Highlight the constraints in food supply chain management in Indian agriculture.
- Suggest a way forward.

Answer:

Food processing has become an integral part of the food supply chain in the global economy. The Economic Survey notes that during the last 5 years ending 2018-19, this sector has been growing at an **Average Annual Growth Rate (AAGR) of around 9.99%** as compared to around 3.12% in agriculture and 8.25% in manufacturing at 2011-12 prices.

The food processing industry provides a vital link between agriculture and industry as:

- It has potential to drive the rural economy as it brings synergy between the consumers, industry and agriculture. A well-developed food processing industry increases farm gate prices, reduces wastages, ensures value addition, promotes crop diversification, generates employment opportunities and increases export earnings.
- The industry contributes around **14 percent of manufacturing GDP** and is ranked fifth in terms of production, consumption, export and expected growth, which provides a huge market for agricultural produce.
- **70% of India's rural households still depend primarily on agriculture for their livelihood**. Thus, the food processing sector provides **huge employment generation potential** as well.

However, it is still argued that the potential of the food processing industry is yet to be tapped in India owing to various challenges in the agri-food supply chain system in India, as follows:

- **Lack of infrastructural facilities**: There exists a gap in the supply chain infrastructure due to lack of primary processing, cold storage and associated infrastructure and distribution facilities.
- **Lack of standardization and certification**: Poor standards, regulations, and certification issues in India hamper exports from the food processing industry. Also, there is an inadequate focus on quality and safety standards.
- **Uneven facilities amongst states:** 60% of the cold storages are located in just four states—Uttar Pradesh, Punjab, West Bengal and Gujarat.
- **Institutional gaps in the supply chain**: For instance, there is overdependence on Agricultural Produce Marketing Committees (APMCs) for procurement of agricultural produce.

- **Lack of awareness**: Pre-processing losses occur due to lack of awareness and a dearth of storage and pack-house facilities close to the farm gate.
- **Other constraints:**
    - Lack of avenues to adequately grade, sort and pack perishable produce.
    - High requirement of working capital.
    - Low availability of reliable and better accuracy instruments and equipments.
    - Inadequate automation with regard to information management and underdeveloped linkages between R&D labs and industry.
    - Inadequate product development and innovation.

Way Forward:

- **Skilling**: It is required at two levels:
    - **At the farm gate** in promoting best agricultural practices and in processing activities. Also, revamped extension services are critical at the farm gates.
    - **Skill training in the food processing industry** must be stepped up.
- **Enhancing infrastructure**: Enhancing the cold-chain capacity, logistics infrastructure and farmer training.
- **Backward linkages to farmers:** It needs to be made more robust. Contract farming is an attractive avenue in this regard.
- **Smoothening the supply chain:** This can be done by improving quality standards, expanding supply of formal credit, particularly to small and medium enterprises, and broadening the skilled labour pool in the economy.

In this context, the Agriculture Export Policy (2018) is expected to give a big push to food processing/manufacturing.

Student Notes:

4. ***Micro food processing sector is the key driver of growth in the Indian economy as it encourages food processing innovation. In this context, state the challenges faced by the micro food processing sector and discuss how the recent initiatives taken by the government aim to address them.***

Student Notes:

Approach:

- Briefly highlight the significance of the micro food processing sector for the Indian economy.
- Discuss the challenges faced by the micro food processing sector.
- Highlight the recent steps taken by the government to address the above challenges.
- Conclude accordingly.

Answer:

The micro food processing sector is a fast growing industry and is an important connection between the agricultural and industrial sectors of the economy. Mostly unorganised, it comprises over 25 lakh food processing units contributing around 74% of employment in the food processing sector.

Nearly 66% of these units are located in rural areas and about 80% of them are family-based enterprises supporting livelihood of rural households and minimising their migration to urban areas. They encourage food innovation by developing new methodology and practices for preserving food by improving the shelf life of agro and horticultural produce, adding necessary nutrition, optimizing the process parameters by adding value through processing and reducing wastage.

Challenges faced by the micro food processing industry

- **Lack of efficient supply chain infrastructure**: Inadequate expansion of processing and storage capacity commensurate with agriculture production have been identified as the main reasons for higher wastages, higher cost of production, lower value addition in micro-food processing sector.
- **Growing informalization**: The micro-food processing industry has a high concentration of unorganised segments, representing almost 75% across all product categories. This causes inefficiencies in the existing production system.
- **Poor credit facility:** Micro-food processing units face problems in their access to bank credit due to the seasonal and perishable nature of the commodities handled by these units.
- **Marketing of processed food**: It is a major problem faced by food processors particularly for the micro and small processors. Given the scale of operation, individual units are unable to invest in marketing and branding impacting performance of the sector.
- **Limited ability to control quality and safety**: Being largely unorganized segments, implementation of quality and safety norms are difficult leading to practices such as milk adulteration and use of carbide for fruit ripening becoming more widespread. Moreover, food testing, quality certification and safety issues are other weak areas needing priority attention.

Initiatives taken by the government to address the above challenges

- **Pradhan Mantri Formalisation of Micro food processing Enterprises (PMFME) Scheme**:
  - The scheme provides existing micro food processing units to avail **credit-linked capital subsidy** @35% of the eligible project cost to address challenges of institutional finance.

- **One District One Product (ODODP) approach under the scheme** would help micro food processing units to reap benefits of scale in terms of procurement of inputs, availing common services and marketing of products.
- **Proper training and research** to individual or group owned food processing enterprises through academic and research institutions under MOFPI along with state level technical institutions.

- **Production Linked Incentive Scheme for Food Processing Industry (PLISFPI)**: It supports creation of global food manufacturing champions and supports Indian brands of food products in international markets.
- **PM Kisan SAMPADA Yojana:** It aims to address supply chain constraints by creation of modern infrastructure with efficient supply chain management from farm gate to retail outlet.
- **The Food Safety and Standards Authority of India** (FSSAI) supports the Micro Level Food Entrepreneurs and Farmer Producer Organizations (FPOs) to improve the standard of their food businesses by providing food safety training and obtaining FSSAI license and registration.

The need of the hour is effective implementation of above schemes by adopting integrated approach and streamlining the regulatory structure. Further, attempts are required to be made to promote farmer-producer interaction, provide appropriate tax incentives and holidays for setting up micro food processing industries, taking care of expenses on market promotion and ancillary activities.

5. Discuss the potential of digitization in harnessing the untapped potential of the food processing sector and resolving the challenges that it faces.

Approach:

- Give a brief introduction about the food processing industry in India.
- Highlight the several challenges faced by the food processing industry.
- Discuss the potential of digitization in harnessing the untapped prospects of the sector and addressing the challenges it faces.
- Give a brief conclusion.

Answer:

India, being a leading producer of a diverse array of agricultural products, presents an extremely lucrative opportunity to turn the country into a potential hub for food processing**.** The sector is one of the largest **employment-generating** industries in India and contributes **8% of the GDP** of the nation. It is estimated to be **worth $380 billion** and is **projected to grow at a CAGR of 11%** to reach $540 billion by 2025. Further, in FY22 alone India exported agricultural and processed food products worth US$ 25.6 billion, and the **export of processed vegetables and fruits increased by 59.1%**.

Several schemes such as Pradhan Mantri Formalisation of Micro Food Processing Enterprises (PMFME) Scheme, Pradhan Mantri Kisan Sampada Yojana, Production Linked Incentive Scheme for Food Processing Industry, etc. have been implemented to enhance the productivity and competitiveness of the sector.

However, despite its growth, there are several challenges faced by the food processing industry, which hinder it from harnessing its untapped potential, such as:

- **Lack of cutting-edge infrastructure:** Many food processing businesses operate in the small and medium enterprises (SMEs) sector, which often lacks the resources needed to upgrade their facilities and machinery to the latest technology.

Student Notes:

Student Notes:

- **Post-harvest loss:** Inefficient supply chains due to insufficient cold storage facilities and transportation networks result in significant post-harvest losses.
- **Lack of access to working capital:** Traditional banks and financial institutions often have stringent lending criteria, making it difficult for SMEs involved in the food processing sector to access funding. Moreover, the loan approval process can be time-consuming and cumbersome. This results in cash flow issues, which can hinder their ability to grow and invest in new technologies.
- **Competition from international players:** The food processing industry in India faces competition from international players, that have access to better technology, more efficient supply chains, and lower costs.
- **Lack of skilled manpower:** There is a shortage of skilled workers and a lack of training facilities tailored to the specific needs of the sector posing challenges in adopting advanced processing techniques, implementing food safety practices, and optimizing production processes.
- **Issue in exports**: Compliance with international quality standards and regulations is essential to access export markets. The presence of pesticide residues and lack of awareness on policy requirements for global markets impact food processing exports from India.

In this context, **digitization of the sector has the potential in harnessing its untapped potential and resolving the challenges it faces in the following ways:**

- Digitization can help **streamline the supply chain** and help the sector become more efficient, productive, and competitive by enabling real-time tracking of inventory and delivery, reducing wastage and ensuring timely delivery of goods. For instance,
    - **Internet of things (IoT)** can help connect various parts of the supply chain, enabling real-time tracking and monitoring of inventory and delivery.
    - **Artificial intelligence (AI)** can help optimize production processes and improve the quality of products.
    - **Blockchain** can help ensure transparency and traceability in the supply chain, improving the efficiencies for processors by cutting out middlemen.
- The data produced by digitization would help smaller processing units in **planning capacities and procurements more efficiently**.
- Digitization can enable SMEs' to **determine and analyze their creditworthiness and understand working capital solutions** based on their financial history and potential.

Thus, to achieve the target of $540 billion by 2025, the Indian food processing units need to become more competitive and innovative, and digitization can play a crucial role in this.

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to all Successful Candidates

16

in **TOP 20** Selections in **CSE 2023**

from various programs of **Vision IAS**

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Aditya Srivastava

2 AIR

Animesh Pradhan

5 AIR

Ruhani

6 AIR

Srishti Dabas

7 AIR

Anmol

9 AIR

Nausheen

10 AIR

Aishwaryam Prajapati

39

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2 AIR

Garima Lohia

3 AIR

Uma Harathi N

1 AIR

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