CHAHAL ACADEMY

FOOD PROCESSING SECTOR

YOJANA JULY 2024

SECTION

Yojana July 2024
Food Processing Sector

TOPIC 1: EFFECT OF FOOD PROCESSING ON THE CREATION OF JOBS AND THE IMPROVEMENT OF SKILLS:

A STEADFAST EMPHASIS ON INNOVATION, SUSTAINABILITY, AND MARKET INTEGRATION.

- Due to the success of the Green Revolution in India, food production in India has improved from scarcity to surplus. With the increased food production, India's Food Processing sector is also growing, increasing its contribution to the global food demand.
- The food processing sector in India is also known as the Sunrise Sector
- Why **sunrise sector**:-
  - ➢ The principal source of income for **70% of households** in India continues to be agriculture.
  - ➢ The industry has a significant potential for creating jobs.
- India is currently processing **less than 10%** of its agricultural production, which offers tremendous opportunities for:
  - (i) Increasing Processing Levels
  - (ii) Immense investment potential.
  - (iii) Creating Skilled Workforce
- India has consistently produced more **agricultural output** than other countries, placing it in the following order in the world: .
- **1st**: Pulses and milk
- **2nd:**Vegetables, fruits, wheat and rice
- **3rd**: Cereals, eggs.
- **Food Processing Sector (FPS) Status & Role in India:** With regard to GDP, **employment, and investment potential**, the food processing industry has grown to be an important component of the Indian economy.

(a) Contribution to GDP:

In comparison to the agricultural and allied sectors, which grew at an average annual growth rate of **4.87%** at (2011–12 prices), the food processing sector **(FPS)** grew at an **average annual growth rate of 8.38%** over the past five years ending in 2020–21. As a result, FPS now makes up as much as **10.54%** of the **manufacturing** and **11.57%** of the **agricultural sector.**

However, despite the rise in demand for processed and ready-to-eat food in India, the food processing industry's **(FPI) portion** of the country's total GVA in 2020–21 was just **1.88%,** compared to **manufacturing's (17.86%)** and **agriculture's (16.26%)** contributions.

(b) Contribution to employment generation

According to the 2019-20 Annual Survey of Industries (ASI);

(i) There were **20.32 lakh registered Food Processing Sector(FPS)** employees.

(ii) **Unregistered FPS** supported employment of **51.11 Lakh workers**- which corresponds to the **14.18%** employment in the **unregistered manufacturing sector**.

***What has been done: MoFPI has implemented Central sector scheme (CSS)**

(i) **Pradhan Mantri Kisan Sampada Yojana (PMKSY)**: It is a **Central Sector Scheme** (CSS) designed to make it easier to build modern infrastructure and implement **effective supply chain management** (from **Farm Gate to Retail Output**).

The Food Processing Industry has improved as a result of the Scheme by:

- ➢ The creation of **job opportunities**.
- ➢ Lowering the amount of **agricultural product waste**.
- ➢ Increasing **processing levels**.
- ➢ Increasing **export** of processed foods.

***Milestone Achieved:** The Scheme (including its sub-components) has created **9.69 lakhs** substantial direct/ indirect employment opportunities

(ii) **Pradhan Mantri Formalization of Micro Food processing enterprises (PMFME)-June 2020**- Its aim is to **increase the competitiveness** of individual microenterprises in the unorganized food processing industry, the MoFPI is implementing this Central Sector initiative under the **Atmanirbhar Bharat Abhiyaan**. This is the first government program designed specifically for micro food processing (MFP) businesses, utilising credit-linked subsidies (**CLS**) and the One District, One Product (**ODOP**) model.

- **Aim** : To promote **formalization of FPS**
- **Target** : to Benefit **2 Lakh enterprises** through credit linked subsidies(**CLS**) and adopting the approach of **ODOP.**
- **Total outlay – 10,000 crore for 2020-2025.**
- **Loans to**: Individual beneficiaries, Self help Groups (**SHGs**), Farmer Producers Organization (**FPOs**), Producer Cooperative Societies.

* **Milestone achieved**: Since its inception a total of **65,094** loans have been sanctioned under credit linked subsidy component.

(c) Skill development Initiatives

***Challenge: Availability of skilled manpower in the FPI in India**

What has been done so far: Ministry of Food processing Industries (**MoFPI**), working in close collaboration with **FICSI** (Food industry capacity and skill initiative), **SSC** (Sector skill council) ,**NIFTEM**(National Institute of food technology entrepreneurship and management)- an institute under MoFPI to regularly **guide and assist**, it in achieving its mandate.

*The **Net Expected**: Skilled Human resource requirement in the **11 major sub sectors** of the industry in the country during (2021-30), would be around **13.4 Lakh.**

***11 Major subsectors**:

(a).Bread and bakery products.
(b) Cold chain (including logistics)
(c) Meat and poultry processing
(d) Milling (grains and oil seeds)
(e) Beverages (tea and coffee)
(f) Ready to eat and ready to cook products
(g) Soya processing and Spices
(h) Dairy products
(i) Fish and seafood processing
(j) Fruits and vegetable processing
(k) Condiments(prepared food compounds containing one or more spices or spice extracts, which upon its addition enhances the flavor of the food)

- Government has taken several skill development initiatives to ensure availability of **technically qualified** and **trained staff.** It is strengthening the **SSC (skill sector council)** to complete the validation of the **Qualification packs (QPs)** for each job role and to assist in the development of the course curriculum through NIFTEM.

NABARD's function in the infrastructure of food processing and storage :-

- As a leading FPS stakeholder and essential contributor to the development of FPI infrastructure, NABARD has been at the forefront.
- **NABARD** oversees **two important funds,** namely
  (i) **FPF** (Food processing fund)
  (ii) **WIF**(Warehouse infrastructure fund)
  Allocation of the two funds: Government of India

Purpose: For supporting the FPS and the creation of warehouse infrastructure for **scientific storage** of food grains in the country.

(i) Food Processing Fund (FPF):

- **Instituted in:** 2014-15
- **Corpus:** 2000 crore
- **Objectives**:
  (i) Providing **affordable credit** to **public and private players** for setting up of **Designated Food Parks (DFPs)** notified by the MoFPI, GOI.
  (ii) **Establishing food processing units**
- **Milestone achieved**: Till **March 2024, NABARD** sanctioned "**Term Loans**" of 1191.57 cr for **14 Mega food parks(MFPs)** , **03 Industrial Parks(IPs)** and **09 Agro processing clusters(APCs)** and **15 Individual Food Processing units(FPUs**).
- **Expected Capacity creation:**
  - **Area** – 1370.03 acres – **14 MFPs + 03 IPs+ 09 APCs** (these will act as central Processing centers (CPCs)
  - 14 CPCs of MFP projects will be supported by **45 Primary Processing centres** (PPCs) and several **Collection Centres(CCs)** to be established in the catchment zone of the respective MFP
  - **Collection Centres (CCs)**- Help in the sourcing of Agricultural produce directly from the farmers by FPUs to be established in the MFPs
  - Opening up **Direct market access** for the industry that uses it.
- **Term Loans:**
  - **Activities covered :** MFP, IP, APC, and Individual Units.
  - **Borrowing Entities:** State Governments, State Government owned entities, SPVs(Special Purpose Vehicles), Federations, Companies, Partnership firms, Limited Liability Partnerships(LLPs)
  - **PLI (Performance Linked Incentive)**: GOI has approved PLI scheme for **10 Key sectors** including Food processing sector.
  - **Budgetary Outlay** : **10,900 crore**.
  - **Tenure:** 6 years.
  - **Viability:** Financing of Industrial units coming up in completed DPFs, especially those that have been supported by NABARD, will ensure the viability of both the **DFP, and the IFPUs**, respectively.

(ii) Warehouse Infrastructure Fund (WIF)

- **Announced in:** 2013-14
- **Corpus:** 5000 crore (2013-14)
- **Further Allocation :** 5000 cr (2014-15)
- **Need:** To support State Government, State Government owned entities, and corporations for **creation of scientific warehouse capacity** through financial support. Creation of storage infrastructure in APMCs was included later.
- **Types:** Dry Warehouses, cold-storage facilities, cold-chain infrastructure.
- **Milestone Achieved: Under the fund,** 8161 projects have been sanctioned across the country and Creation of **13.74 Million Metric Tonne (MMT)** , out of which **9.69 MMT** are "**scientific storage**".

Distribution in the country:

(i) **Southern and Western Region**: Majority of decentralized storage.

(ii) **Northern Region**: Major procurement region accounted for large sized storage structures.

(iii) **Gujarat, Odisha and Tamil Nadu**: Small size storage structures at Village level.

*Estimated investment potential in FPS

- **Market size: Rs.28, 057.5 billion** (2023)- one of the largest in the world.
- **Output expected to reach**- 61,327.5 billion (**2032**)
- **Projected Market growth rate** – 8.8%
- **Initiatives:** Planned infra spending of approx Rs.100 **lakh cr** under the **NIP (National Infrastructure Pipeline)** and **PMKSY** with budgetary outlay of 4600 cr till FY 2020-2025 have provided much needed fillip to the sector.
  - **Policy Initiatives**:
    - Exempting all processed food items from the purview of licensing under the **Industries(Development and Regulation) Act,1951.**
    - Allowing 100% FDI through an automatic route for the FPS.
    - Reducing the GST on both **processed and raw goods.**
    - Covering **more than 71.7%** of food products under various chapter headings and subheads under a **lower tax band (0-5%)**.
  - **Way Forward:**
    - To make india a developed country by **2047** , the contribution of FPS to the overall GVA needs to be Quadruple to **~7.2%**
    - Boosting the **competitiveness of India's processed food exports** abroad.
    - The policy goal should be to make India a **market leader** in international trade for at least five value chains:

      (i) Processed fruits and vegetables

      (ii) Processed fish and seafood

      (iii) Meat and dairy products.

      (iv) Poultry and

      (v) Eggs.
    - This must be accompanied by nurturing a skilled workforce for the gaps between the workforce and the industry.

TOPIC 2: India's Food Regulatory Landscape: Key Points

- The Government of India enacted the Food **Safety and Standards Act in 2006** which led to the transformation in its food regulatory landscape. It replaced the outdated laws and established FSSAI as the apex food regulator, responsible for domestic and imported food safety.
- **Scope of FSSAI :** It covers manufacturing, import, distribution, and sale of food products.
- **Objectives of FSSAI :-**
  - Formulate science-based standards for food products, additives, and contaminants.
  - Regulate packaging and labeling requirements.
  - Establish an integrated food safety surveillance system.
  - Promote self-confidence among food businesses through training and certification.
  - Collaborate with international organizations to harmonize Indian standards with global benchmarks.

National Food Control Systems

- A National Food Control System is designed by every country for ensuring the food safety for human consumption.
- **Focus:** Standards for domestic production, sales, and international trade.
- **Objectives** : The following objectives are defined by Food and Agriculture Organisation (FAO) -
  - Protect public health by reducing the risk of foodborne illness.
  - Protect consumers from unsanitary, mislabeled, or adulterated food.
  - Contribute to economic development by maintaining consumer confidence and supporting trade.

India's approach towards a Resilient Food Regulatory Ecosystem:

- FSSAI, being a regulatory body, leads India's food safety ecosystem.
- Various ministries and departments coordinate to establish a strong and transparent Food Regulatory Ecosystem. Some of these are the Ministry of Agriculture and Farmers Welfare, Ministry of Health and Family Welfare, Ministry of Food Processing Industries, Ministry of Fisheries, Animal Husbandry and Dairying, Export Inspection Council, Spices Board etc.
- **Export Regulation:** Handled by autonomous organizations like EIC, APEDA, MPEDA, Spices Board, Tea Board, and others.

Standard Setting Process:

- **Science-Based Standards are** developed through a rigorous and transparent process by FSSAI with the help of various scientific bodies including Scientific Panels and Scientific Committee.
  - **Scientific Panels (SPs):** It consists of experts from research institutes and government organizations.
  - **Scientific Committee (SC):** It reviews and validates standards before final approval by the Food Authority.
- **Harmonization:** Indian food standards are harmonized with international guidelines, particularly those established by **Codex Alimentarius Commission (CAC)**.
- **Public Consultation:** Draft standards are published for stakeholder comments before finalization.
- Final regulations are then notified in the Gazette of India.

Enforcement and Regulatory Oversight:

- For effective enforcement, a multi-pronged approach is employed by FSSAI which combines traditional inspections with self-compliance initiatives and third-party audits. Almost 6 billion Food Business operators are part of India's food safety network.
- **Food Safety Compliance System (FoSCoS)** is an **Integrated online platform** for licensing, registration, and monitoring of the **Food Business Operators (FBOs)**.
- **Food Safety Officers** : A network of Food Safety officers of FSSAI conducts inspections and investigates the complaints to ensure the food safety.
- A **Risk-Based Inspection System (RBIS)** has also been developed by FSSAI with an aim of optimizing the regulation by targeting FBOs based on risk matrices.
- **FoSCoRiS Mobile App:** It supports real-time monitoring and data collection during inspections.

Capacity Building and Self-Compliance:

Self-compliance is essential to effectively implement the food safety policies. To promote a culture of self-compliance, FSSAI has introduced various initiatives.

- **Food Safety Training and Certification (FoSTaC) Programme :** Its aim is to build the capacity of food handlers and ensure trained food safety supervisors in establishments. **Over 17.2 lakh food handlers have been trained by FSSAI.**
- **Third-Party Audits:** Recognized auditing agencies conduct mandatory food safety audits for high-risk categories.
- **Hygiene Rating Scheme:** Voluntary initiative encouraging businesses to assess and improve food hygiene and safety levels.

Import Management:

- **FSSAI regulates:** Domestic and Import food safety through the Food Import Clearance System (FICS). FICS is integrated with ICE-GATE for efficient scrutiny and approvals. FSSAI has authorized officers at 156 entry points to facilitate food import clearance.
- **Import Control:** Food import control with respect to animal and plant health is managed by respective ministries through animal and plant quarantine certification services respectively.

Food Testing and Surveillance

- **A Laboratory Network** comprising primary, referral, and National Reference Laboratories (NRL) has been established by FSSAI.
- India currently has 239 primary labs, 22 referral labs and 12 reference labs.
- **Food Safety on Wheels (FSW):** These are mobile units installed with Rapid Analytic Food testing Kits (RAFT) for rapid food testing and awareness.
- **Detect Adulteration and Rapid Test (DART)** Book and **Food Safety Magic Book** have been developed by FSSAI to enable the consumers to test for common adulterants at home.
- **Surveillance Programmes:** Pan-India surveillance programmes are taken up by FSSAI to identify non-compliance hotspots.
- FSSAI is also developing an **integrated Food Laboratory Network** (**IFOLNET**) for real time monitoring.
- **NetProFaN (**Network of professionals in food and nutrition) has been created by FSSAI to help FSSAI in developing and scaling up the implementation of its programs.
- **NetSCoFAN (Network for Scientific Cooperation for Food Safety and Applied Nutrition)** is a collaboration among research institutions and academic bodies for food safety research and standard setting.

Role of Autonomous Organizations in Export Trade:

- **Export Inspection Council (EIC):** Official export certification body ensuring safety of exported products.
- **APEDA (Agricultural and Processed Food Products Export Development Authority):** Promotes export of agricultural and processed food products.

- **MPEDA (Marine Products Export Development Auhority):** Promotes marine products industry and inspects marine products for export.
- **Tea Board & Coffee Board:** Certify exports and promote domestic trade of tea and coffee.
- **Spices Board:** Regulates and promotes export of Indian spices.
- **CAPEXIL & SHEFEXIL:** Promote export of chemical and allied products, and shellac-based products.
- **IOPEPC (Indian Oilseed and Produce Export Promotion Council):** Promotes export of oilseeds and oils, issuing certificates of export.

TOPIC 3: Processed Foods: Rising demand for Healthier Food options

Introduction: Ancient Wisdom and Modern Shifts:

- **"युक्ताहारविहारस्य युक्तचेष्टस्य कर्मसु। युक्तस्वप्नावबोधस्य योगो भवति दुःखहा,"** Emphasizing the importance of a balanced diet, healthy entertainment, right effort, and sound sleep for a life free of sorrow. This ancient wisdom reflects the growing contemporary awareness of the importance of healthy living.

Growing Awareness and Demand for Healthier Food:

- There has been a **significant shift** from **processed foods to healthier options** as people become more conscious of their diet's impact on their physical health, energy levels, mood, and long-term vitality.
- The fast-paced modern lifestyle often leads to the consumption of convenient, processed foods, but a growing number of individuals are opting for healthier alternatives.

NAFED's Role in Promoting Healthy Eating:

- The National Agricultural Cooperative Marketing Federation of India (**NAFED**), a **key player** in India's agricultural sector, has expanded its focus to include healthier food initiatives like **Millets**, **Bharat Atta, Bharat Dal, and Bharat Chawal.**
- These initiatives are part of NAFED's commitment to promoting healthy eating at affordable prices while supporting sustainable agriculture.

Millets: A Nutritious and Sustainable Grain:

- **Nutritional Benefits**: Millets are **highly nutritious**, rich in **protein, fiber**, and essential vitamins and minerals, including **phosphorus, magnesium, and iron**. They are particularly beneficial for individuals with diabetes due to their **low glycemic index** and **gluten-free nature**, making them suitable for those with celiac disease or gluten sensitivities.
- **Health Advantages**: Millets support **digestion**, **prevent asthma**, and **promote heart health**, making them a versatile and healthy food choice.
- **Sustainability**: Millets are **resilient to adverse weather conditions** and have a rich nutritional profile, offering a promising alternative to traditional staple grains.
- NAFED's Millets Initiatives:
  - **Millets Experience Centre**: NAFED established the "**Millets Experience Centre**," named **Shree Anna**, at **Dilli Haat, New Delhi**, to showcase the nutritional benefits and culinary versatility of millets to people of all ages.
  - **Support for Startups**: NAFED has actively supported millet-based startups by showcasing their products at various events.
  - **Millet Corners and Vending Machines**: The introduction of exclusive millet corners within **NAFED Bazaar stores** and the deployment of "**Millet Vending Machines**" across the Delhi-NCR region encourage healthy snacking habits.
  - **Global Promotion**: Millets were featured in custom millet-centered gift hampers for the G20 meetings, highlighting their significance on a global stage.

Bharat Atta: Premium Whole Wheat Flour:

- **Nutritional Profile**: **Bharat Atta** is a premium-quality whole wheat flour **rich in dietary fibers, vitamins, and minerals**. It is made from 100% **whole wheat grains** and processed to retain their natural goodness.
- **Government Support and Affordability**: Launched under the **Government's Open Market Sale Scheme (OMSS)**, Bharat Atta is offered at concessional rates to counter rising food prices. The Government of India has set a price of **₹27.50/kg**, with NAFED distributing it across the country through **retail chains**, **NAFED Bazaar outlets**, and mobile vans.

Bharat Chawal: Nutritious Rice Option:

- **Nutritional Value**: **Bharat Chawal** is marketed by NAFED and consists of essential nutrients, vitamins, and minerals, providing a wholesome dining experience.

Bharat Dal: Promoting Pulses for a Healthier Diet:

- **Nutritional Benefits**: Pulses, including **Bharat Dal**, are high in protein and fiber, low in fat, and rich in complex carbohydrates, micronutrients, vitamins, and minerals such as iron, calcium, magnesium, and potassium. This makes them an excellent choice for maintaining a healthy weight and reducing the risk of chronic diseases.
- **Environmental Sustainability**: Pulses are environment-friendly as they **require less water to grow** and improve soil fertility, making them a sustainable food choice.
- **Health Advantages**: Incorporating pulses into meals can contribute to heart health by **managing cholesterol levels** and providing **slow-release energy**, which keeps one satiated for longer periods.
- **Government Initiatives**: To ensure the steady supply of pulses and support farmers, the government has implemented schemes like the **Price Support Scheme**

(PSS) and **Price Stabilization Fund (PSF)**, which ensure fair prices for crops and an adequate food supply.

Government and NAFED's Collaborative Efforts:

- **Addressing Pulse Shortages**: Given the occasional shortage of pulses in India, the government, in collaboration with NAFED, supports farmers through the PSS and PSF schemes, ensuring food security and stable market prices.

Conclusion: Building a Sustainable and Healthy Food System:

- As the demand for healthier food options continues to rise, NAFED's initiatives, including **Bharat Atta, Bharat Dal, Bharat Chawal, and the promotion of millets**, play a crucial role in meeting consumer expectations while supporting sustainable agriculture.
- By embracing these initiatives, consumers can make healthier choices, contribute to **sustainable farming practices,** and help build a more resilient and sustainable food system for future generations.

TOPIC 4: Export Potential and Global Competitiveness of Indian Processed Foods

- Food and agricultural products constitute approximately **11%** of **India's total exports.**
- The food processing industry (FPI) is critical, with India being a top producer in various food categories such as **dairy, cereals, fruits, vegetables, animal proteins, fish, spices, and tea.**
- The sector involves many **SMEs** (Small and Medium-sized Enterprises), contributing significantly to **employment creation** and **enhancing farmers' incomes.**

India's Export Landscape:

- India's share in **global merchandise exports** is around **1.8%**, ranking it as the **18th largest exporter** globally.
- Exports contribute about **23% to India's GDP**, a notable figure compared to large economies like the **US** (**12%**), **Japan** (**19%**), and **China** (**21%**).
- Post-COVID-19, **India's exports** saw recovery but slowed in the last fiscal year, with merchandise exports slightly declining to **USD 437 billion in 2023-24.**

Export Potential in Processed Food Sector:

- Despite being the **second-largest agricultural producer**, India has a **low share** in global processed food exports.
- India's **export basket** is dominated by a few key items such as **rice, spices, buffalo meat, sugar, and oil meals**, which have established markets in countries like the **USA, China, UAE, Saudi Arabia, Bangladesh, Iran, Indonesia, Vietnam, Sudan, and the Netherlands.**
- There is **immense untapped potential for export growth** in processed food products, indicating opportunities for economic diversification.

Key Policy Initiatives to Enhance Exports:

- **Agricultural Export Policy (2018)**: Aims to boost agricultural exports to USD 100 billion by creating a **conducive environment** through supportive measures.
- **Production Linked Incentive Scheme for Food Processing Industry (PLISFPI)**: Focuses on diversifying India's export portfolio by promoting **value-added food segments** like ready-to-cook/ready-to-eat foods, processed fruits and vegetables, marine products, and mozzarella cheese.
- **Brand India Promotion**: Includes global branding and marketing support to enhance the international presence of Indian processed foods.
- **Infrastructure Modernization**: The Pradhan Mantri Kisan Sampada Yojana (PMKSY) addresses infrastructure challenges faced by SMEs and promotes technology adoption in the FPI sector.
- **Mega Food Parks (MFPs)**: Facilitate clustering of processing units, knowledge sharing, and higher quality and competitiveness in export markets.

Support from Federation of Indian Export Organizations (FIEO):

- FIEO provides exporters with **market research reports**, **country-specific information**, and data on global trade trends, helping them explore new export opportunities and make informed decisions.

Technological Advancements in FPIs:

- **Valorization**: Converts waste materials from FPIs into valuable products, reducing waste and creating new revenue streams.
- **Irradiation**: Uses radiation for sterilization, extending shelf life, and inhibiting sprouting in food products, ensuring safety and quality for export markets.
- **High pressure processing:** A novel non-thermal food processing method involves subjecting food to high pressures (up to 900 MPa) with or without heat to inactivate microbes or modify food attributes, enhancing desired qualities.

Challenges and Areas for Improvement:

- India's share in global imports of processed food products, such as pet food and bakery items, is low despite rising global demand, highlighting the need for strategic interventions.
- **Data-Driven Policies**: Essential for identifying and maximizing export potential.India could introduce separate **Harmonized System (HS) codes** for **processed foods**, similar to practices in Singapore.
- **Compliance with Global Standards**: Adherence to **WTO Sanitary and Phytosanitary (SPS) measures** is crucial for accessing and maintaining international market presence.

A centralized repository of standards for SMEs is needed for easier compliance.

- **Free Trade Agreements (FTAs)**: FTAs with Mutual Recognition Agreements (**MRAs**) are necessary to streamline certification processes for Indian exports, reducing barriers to market entry.

Quality Assurance and Raw Material Supply:

- The formation and promotion of **10,000 Farmer Producer Organizations** (FPOs) by the government is a positive step toward ensuring a consistent supply of high-quality raw materials for processed food exports.
- **Capacity Building and Training**: Essential for aligning local manpower with export demands. Training in food safety, **HACCP certification**, and professional courses in food technology, science, engineering, and packaging is necessary to develop the required skills.

Logistics and Marketing Strategies:

- **Efficient Logistics**: Cold chains, temperature-controlled warehouses, and reefer vans are crucial for maintaining product quality during transportation, especially for exports.
- **Global Trade Fairs**: Play a critical role in exposing Indian processed food exporters to global buyers, particularly benefiting startups and MSMEs that may lack the resources to engage with key international markets directly.

Conclusion: Path Forward for Indian Processed Food Exports:

- India's processed food sector holds vast potential for export growth. By leveraging its **rich agricultural base**, investing in modern infrastructure like **food parks**, and prioritizing compliance with **food safety standards**, India can become a globally competitive player in processed food exports.
- Continued **government support, industry collaboration**, and a focus on innovation will be crucial to transforming India's processed food industry into a major economic growth driver, establishing a strong position in the global market.

TOPIC 5: The Coconut Raze is Real and Here to Stay"

1. Global and National Significance of Coconut:

- India is the **largest producer of coconuts** globally, playing a pivotal role in the international coconut industry.
- Coconut is a **tropical palm** predominantly grown in **coastal areas** of tropical countries. It is **vital for sustainable agriculture**, contributing to environmental, social, and economic sustainability.
- The crop's versatility, with every part being used for various purposes, **supports rural livelihood and social security**, emphasizing its importance in these regions.

2. Diverse Products Derived from Coconut:

- **Coconut Oil (CO):**
  - CO is extracted from the **white kernel (copra)** of the coconut, traditionally used as a cooking oil in South India, especially in **Kerala, Tamil Nadu, and Karnataka.**
  - It has applications in **beauty products** (face creams, soaps, detergents, etc.) and the oleo-chemical industry.
  - CO contains **medium-chain fatty acids** (MCFAs), primarily lauric acid (C12), which enhances immunity. **Lauric acid converts to monolaurin**, a component in breast milk that imparts immunity to infants.
  - The industry is now s**eparating lauric acid fractions** through **fractionation**, marketing them as health supplements. Other fatty acids like **caproic, caprylic, and capric acids** (C6-C8) possess **antimicrobial** and **antifungal properties**, marketed as Medium Chain Triglycerides (MCT) oil.
- **Virgin Coconut Oil (VCO):**
  - VCO emerged globally in the **late 1990s** as the **purest form of CO**, produced without heat, retaining volatile components.
  - It is considered **superior to olive oil in health attributes** and is beneficial for skin care, managing **Alzheimer's, Type 2 Diabetes, Psoriasis, reducing abdominal obesity**, etc.
  - VCO is widely used in health and beauty products, with people consuming 10-15 ml daily for **immunity enhancement.**
- **Coconut Water (CW):**
  - CW, from **both tender and mature coconuts**, is recognized globally as a healthy, natural rehydrating beverage due to its vitamins, minerals, electrolytes, and antioxidants.
  - Its isotonic nature with human blood has made it useful as an **intravenous hydration fluid** in emergencies in the Pacific Islands.
  - CW is the most commonly prescribed **oral rehydrating drink** by doctors across India, with numerous manufacturers producing packed tender CW.
- **Desiccated Coconut (DC):**
  - DC is produced by **grating, shredding, and drying** the mature coconut kernel. It is used in snacks, bakery products, and toppings, and is naturally vegan and gluten-free.
- **Coconut Milk (CM) and Coconut Milk Powder (CMP):**
  - CM is extracted **from freshly grated coconut kernel** and is an essential ingredient in South and Southeast Asian cuisine.

- CM is processed, packed, and marketed with varying fat content, from coconut milk to coconut cream, used directly in dishes or diluted.
- CMP is produced by **spray-drying** CM, making it a convenient alternative for a vegan diet, suitable for people with dairy allergies or lactose intolerance.

- **Nata de Coco (NdC):**
  - NdC is a celluloic substance produced through the **natural fermentation of CW** using acetobacter. It has a gel-like structure and is usually white with a **mild coconut flavor**, often flavored with fruits like pineapple, mango, guava, etc.
  - NdC is **fiber-rich**, fulfilling, and used as a snack or dessert.
- **Coconut Chips (CC):**
  - CC are **thin slices of coconut kernel**, toasted or dried to a crispy texture, with or without added flavors like vanilla, chocolate, mint, or spice.
  - CC **can be combined with millets** to enhance nutritive value.
- **Coconut Vinegar (CV):**
  - CV is **produced naturally from fermented CW** and can substitute synthetic vinegar in recipes like pickles and meat preparations.
- **Coconut Haustorium-Based Products:**
  - The haustorium is a **spongy tissue inside the coconut** that develops during germination. It is nutrient-rich but has a short shelf life.
  - It can be processed into various products like **haustorium candy, powder, crunches, ice cream, juice, or shake**, and is rich in fiber, suitable for making health mixes.

3. Technological Advancements and Support:

- Technologies are being developed worldwide to exploit coconut's potential in food production, including dietary fiber and CW capsules for rehydration.
- The **Coconut Development Board (CDB)** promotes coconut processing and value addition through technology development, training, and technology transfer to manufacturers.
- **Entrepreneurs are supported** in establishing processing units through credit-linked back-end subsidies of **25% of the project cost.**

4. Future Outlook:

- Coconut, referred to as "**Kalpavriksha**" (tree of life), is indispensable for its varied health and nutritional benefits.
- The crop's diverse applications make it a **suitable food product in the global fight against hunger and poverty,** reinforcing its role in sustainable food security.

TOPIC 6: Production Linked Incentive (PLI) Scheme for Food Processing Industry (FPI)

1. Approval and Implementation:

- The **Production Linked Incentive Scheme for Food Processing Industry (PLISFPI)** was approved by the Cabinet on **31st March 2021** with a financial outlay of **₹10,900 crore.**
- The scheme is set to be implemented from **FY 2020-21 to FY 2026-27.**
- It aims to generate **employment** for approximately **2.5 lakh people.**

2. Beneficiary Selection and Incentive Claims:

- Beneficiaries are selected based on eligibility criteria outlined in the scheme guidelines.
- They are **required to submit incentive claims** for a specific financial year by 31st December of the following FY.

3. Scheme Components:

- **Incentivizing Manufacturing:** Focus on four food product segments: Ready-to-cook/Ready-to-eat foods, Processed fruits and vegetables, Marine products, and Mozzarella cheese.
- **Promoting SMEs:** Support for innovative or organic products from Small and Medium Enterprises (SMEs).
- **Branding and Marketing:** Incentives for branding and marketing Indian products abroad to promote Indian brands globally.

4. Millet-Based Products Initiative:

- A **specific PLI scheme for promoting millet-based products** was launched in FY **2022-23** with an outlay of **₹800 crore,** using savings from the original scheme.

One District One Product (ODOP) and PM Formalisation of Micro Food Processing Enterprises (PMFME) Scheme

1. Objective and Implementation:

- Part of the Atmanirbhar Bharat Abhiyaan, the Ministry of Food Processing Industries (MoFPI) is implementing the centrally sponsored **PM Formalisation of Micro Food Processing Enterprises (PMFME) scheme.**
- The scheme provides f**inancial, technical, and business support** for setting up or upgrading micro food processing units across the country.
- It primarily adopts the **ODOP (One District One Product) approach** to achieve scale benefits in procurement, common services, and marketing.

2. Goals and Support:

- Enhance the **competitiveness of existing micro-enterprises in the unorganized food processing sector** and promote formalization.

- Objectives include **capacity building** through increased credit access, integration with organized supply chains, improved branding and marketing, access to common services, and strengthening of institutions, research, and training.

3. Monitoring and Handholding:

- The growth of ODOP units and other groups under the PMFME scheme is **monitored through regular review meetings** with states/UTs, banks, and other stakeholders.
- Beneficiaries receive handholding support under the scheme.

4. Branding and Marketing Support:

- The PMFME scheme **provides support to Farmer Producer Organizations (FPOs), Self-Help Groups (SHGs), Cooperatives, and Special Purpose Vehicles (SPVs)** of ODOP-based micro food processing enterprises.
- This support includes market studies, product standardization, packaging, quality control, food safety adherence, warehousing, storage rentals, and marketing and promotion activities.

TOPIC 7: Smart Food Processing in India: Innovation and Future Prospects

1. Smart Food Processing:

- Smart food processing aims **to reduce the cost of staple food preparation** while enhancing nutritional value, especially in developing countries where poverty drives nutrition.
- The concept involves using **biocompatible, modern, mild, and high-tech processing methods** to increase functionality and nutrient density in grain- and pulse-based foods at affordable prices.

2. Current Status of Food Processing in India:

- India is the **fastest-growing major market** for packaged food globally, with the Food Processing Industry (FPI) being a significant part of the Indian economy.
- Factors such as rising living standards, urbanization, and demand for packaged and self-cooked food have spurred industry growth.
- There is **increasing demand for organic, healthy, and nutritive products** due to heightened health and hygiene awareness.
- India is a **leading exporter of mango pulp**, with major markets including **Saudi Arabia, the Netherlands, the US, the UK, and the UAE.**

3. Value-Added and Functional Foods:

- Important value-added food categories include **convenience foods, alcoholic beverages, confectionery, and sports drinks.**
- **Functional foods**, enriched with vitamins, nutraceuticals, herbs, and plant-derived ingredients, are consumed globally to prevent health disorders and improve overall wellness.
- These foods include **dietary supplements, fortified products, and sports nutrition,** which are manufactured, marketed, and widely consumed.

4. Technological Innovations in Smart Food Processing:

- Internet of Things (IoT) in Food Processing:
  - IoT integrates **sensors, RFID** (Radio Frequency Identification) **tags**, and **data analysis** to enhance food processing and supply chain management.
  - It enables real-time monitoring of processing lines, storage conditions, and product quality, improving efficiency and safety.
- Artificial Intelligence (AI) Applications:
  - AI addresses challenges in the food supply chain by i**mproving traceability, maintaining local identity**, and **reducing post-harvest losses.**
  - AI has the potential to transform Indian agriculture by introducing s**mart food processing techniques** and enhancing the economic value of food production.
- Robotics and Automation:
  - Robotics in food processing ensures **safer, faster, and continuous operations**, especially in handling allergens and non-uniform natural products.
  - Despite their benefits, the **high investment** required for current robotics technology limits its adoption in the food processing industry.

5. Challenges and Opportunities:

- Infrastructure and Investment:
  - Inadequate infrastructure, including **storage, compliance with hygiene standards, and poor transport, hampers the food processing sector's potential,** especially in handling perishable produce.
- Regulatory Framework and Standards:
  - Food processing in India is governed by various laws, including the **Food Products Order (1955)**, **Meat Food Products Order (1973)**, and **Vegetable Oil Products Order (1998).**
  - The Ministry of Food Processing Industries (MoFPI), established in **1988**, plays a pivotal role in regulating and promoting the sector.

6. Future Trends and Recommendations:

- The food processing sector holds **immense potential to transform lives and contribute to the national economy.**
- **Small units** can leverage **locally available raw materials and traditional products** to enter the food sector, supported by production techniques, marketing, and after-sales services.
- Market forces need to develop tools like **collective brand promotion, credit facilities, and extension services** to support the industry's growth.
- **Participatory and action-oriented research** can help address the specific needs and concerns of the food processing sector.
- **Industrial development** has spurred **innovation** in food products, including those based on food grains and industrial alcohol, contributing to the sector's evolution.