

# **FROZEN FOOD MANUFACTURING**

## **1. INTRODUCTION**

The frozen food manufacturing business involves producing and packaging food products that are frozen for long-term storage and distribution. This includes vegetables, fruits, snacks, ready-to-eat meals, frozen meat, and seafood. Uttarakhand, with its abundant agricultural produce, presents a unique opportunity for establishing a frozen food manufacturing business due to its rich agricultural and horticultural resources.

Uttarakhand's favorable climatic conditions for growing a variety of fruits and vegetables, along with the increasing demand for convenience food, make it an ideal location for a frozen food manufacturing business. The state's agriculture-based economy offers an ample supply of raw materials such as **apples, tomatoes, peas, and potatoes**, which are commonly used in the frozen food industry.

Frozen food manufacturing ensures longer shelf life, reduced spoilage, and a high-quality product. The demand for frozen foods is growing due to changing lifestyles, an increase in working professionals, and a greater inclination towards ready-to-eat meals.

## **2. MARKET DEMAND AND TRENDS**

### **A. Market Demand**

- **Consumer Preferences:** Consumers are increasingly opting for frozen food products due to their convenience, longer shelf life, and availability throughout the year. This includes frozen vegetables, fruits, ready-to-cook meals, frozen snacks, and frozen meat products.
- **Urbanization:** With the rise in urbanization and busy lifestyles, people prefer quick meal options, leading to an increased demand for frozen food products.
- **Rural & Agricultural Markets:** Given Uttarakhand's agricultural focus, there is strong potential to supply frozen products to nearby cities and other regions in North India.
- **Tourism and Hospitality:** Uttarakhand's growing tourism sector requires a variety of frozen products for hotels, restaurants, and catering services.

### **B. Trends in the Industry**

- **Health-Conscious Consumers:** There is a rising demand for frozen food that is healthier, such as low-calorie, organic, and preservative-free options.
- **Ready-to-Eat Meals:** Convenience food items such as frozen pizza, ready-to-eat meals, and snacks are gaining popularity, especially among working individuals and students.

- **Innovative Packaging:** Manufacturers are focusing on sustainable and attractive packaging that preserves food quality and is environmentally friendly.
- **Plant-Based Foods:** With an increase in vegan and plant-based diets, there is a growing market for frozen plant-based foods, including frozen vegetables, vegan burgers, and non-dairy ice creams.

### 3. DESIRED QUALIFICATION FOR PROMOTER

To successfully manage a frozen food manufacturing business in Uttarakhand, the promoter should have qualifications in food technology or engineering for technical expertise, business management for operational efficiency, and relevant certifications like FSSAI and ISO for compliance. Practical experience in food manufacturing, preservation, and supply chain management is essential, alongside strong marketing and branding skills to build a competitive edge in the market.

### 4. BUSINESS OUTLOOK AND OPPORTUNITIES

#### A. Opportunities

- **Untapped Market Potential:** While the demand for frozen foods is increasing, Uttarakhand still offers untapped potential for local production. There is an opportunity to serve the local markets as well as supply to nearby regions, including Delhi and Uttar Pradesh.
- **Growing Consumer Demand:** With a growing consumer base looking for convenient and nutritious food options, frozen food manufacturers can cater to a wide variety of products, including vegetables, fruits, meat, and ready-to-eat meals.
- **Collaborations with Hotels and Resorts:** Uttarakhand's hospitality sector, including hotels, resorts, and restaurants, presents an opportunity for frozen food businesses to provide bulk supplies of frozen ingredients or ready-to-cook meals.
- **Export and Distribution:** As the market for frozen food grows, there is an opportunity to expand the reach to other states and international markets. Proximity to Delhi and international borders opens the potential for distribution in neighboring countries like Nepal and Bhutan.
- **Supportive Government Schemes:** The Government of India offers various subsidies, grants, and schemes for food processing and agriculture businesses. These initiatives can be utilized to set up and expand the business.

### 5. MARKET POTENTIAL AND MARKETING ISSUES

#### A. Market Potential

- **Growing Domestic Market:** There is a rising demand for frozen food within India, especially in urban areas. With increasing disposable income, consumers are opting for frozen ready-to-cook or ready-to-eat meals for convenience.

- **Export Potential:** The quality of the raw materials (fruits, vegetables, etc.) grown in Uttarakhand can be utilized to create premium frozen food products, opening up markets in other states and countries, especially in South Asia, the Middle East, and Southeast Asia.
- **Rural Markets:** Expansion into smaller towns and rural markets in Uttarakhand presents an opportunity to tap into the growing demand for convenience foods.

## B. Marketing Issues

- **Awareness and Education:** One of the primary challenges is educating consumers about the benefits and quality of frozen food. Overcoming traditional perceptions that frozen foods are not as fresh as fresh foods can be a challenge.
- **Competition:** The frozen food market is becoming increasingly competitive with both large national brands and local producers entering the market. Differentiating the business through quality, innovation, and product offerings will be essential.
- **Logistics and Distribution:** The cold chain management (from production to delivery) is crucial in maintaining the quality of frozen foods. Establishing a reliable distribution network that ensures proper refrigeration and transportation is essential.
- **Packaging:** Packaging plays a vital role in frozen food products. The packaging must preserve freshness, prevent freezer burn, and be attractive to consumers. Additionally, there is a growing demand for **eco-friendly packaging**.

## 6. BUSINESS INPUTS AND MATERIAL REQUIREMENTS

To successfully run a **frozen food manufacturing business** in Uttarakhand, you'll need a combination of raw materials, machinery, packaging materials, labor, and other essential business inputs. Here's a detailed list of the key inputs and material requirements:

### 1. Raw Materials (Primary Inputs)

#### A. Fresh Agricultural Produce

- **Vegetables:** Common vegetables used in frozen food products include peas, carrots, beans, cauliflower, corn, broccoli, and spinach. These are usually sourced from local farms in Uttarakhand or surrounding regions.
- **Fruits:** Depending on the product range, frozen fruits like strawberries, mangoes, apples, berries, and citrus fruits are often required.
- **Herbs and Spices:** For making ready-to-cook or ready-to-eat meals, herbs and spices like garlic, ginger, chili, coriander, and turmeric are necessary.

## **B. Raw Meat and Seafood (if applicable)**

- **Poultry:** Chicken, turkey, or other poultry products are used for frozen meals and snacks.
- **Fish and Seafood:** Fresh fish, prawns, and other seafood are used for frozen seafood products.

## **C. Grains and Legumes**

- **Rice, Wheat, and Corn:** These may be used for meal kits, ready-to-cook meals, and snacks.
- **Beans and Lentils:** For products like frozen pulses or mixed meals.

## **D. Dairy Products (if applicable)**

- **Cheese, Butter, and Milk:** For making frozen pizzas, snacks, or ready-to-cook meals that include dairy.

## **E. Other Ingredients**

- **Batter and Coatings:** For frozen snacks like samosas, spring rolls, French fries, etc.
- **Sauces and Condiments:** For frozen ready-to-cook meals and snacks, such as pizza, curries, and others.

## **2. Machinery and Equipment**

### **A. Processing Equipment**

- **Washing Machines:** For cleaning vegetables and fruits before processing.
- **Peeling and Cutting Machines:** To peel and chop vegetables, fruits, and meats into suitable sizes.
- **Blanching Machines:** Used for blanching vegetables to preserve nutrients and color before freezing.
- **Cooking Equipment:** If you are producing ready-to-eat meals, you'll need cooking machinery like industrial ovens, fryers, or steamers.

### **B. Freezing Equipment**

- **Blast Freezers:** These are essential for rapidly freezing food products to preserve nutrients, texture, and flavor. Blast freezers reduce the time food spends at critical temperatures, ensuring high-quality products.

- **Cold Storage Units:** You will need large-capacity, temperature-controlled storage units to store the frozen food products until they are dispatched.

### **C. Packaging Machines**

- **Vacuum Packaging Machines:** Used to vacuum-seal food to prevent freezer burn and extend shelf life.
- **Sealing Machines:** For sealing frozen food packets, especially in airtight pouches or trays.
- **Weighing Machines:** To ensure accurate portions for packaging.
- **Labeling Machines:** For applying barcodes, product names, expiry dates, and other necessary information.

## **3. Packaging Materials**

### **A. Packaging Types**

- **Vacuum-seal Bags:** These are used for products like frozen vegetables, fruits, and meat. Vacuum-sealing helps to reduce air exposure, preserving food quality.
- **Plastic Containers:** These are often used for larger products like ready-to-eat meals, frozen curries, or meal kits.
- **Plastic Clamshells or Trays:** For frozen snacks like samosas, French fries, or cutlets.
- **Heat Seal Pouches:** Used for packaging individual servings of frozen meals, vegetables, or snacks.

### **B. Packaging Consumables**

- **Plastic Films:** Used for outer packaging to protect frozen food products.
- **Labels and Stickers:** For branding, nutritional information, and expiry dates.
- **Styrofoam Boxes:** Used for bulk packaging or transporting frozen food products to retailers or customers.

## **4. Cold Storage and Distribution Equipment**

### **A. Cold Chain Infrastructure**

- **Cold Storage Rooms:** Properly insulated rooms with the capability to maintain freezing temperatures, crucial for storing large quantities of frozen food.
- **Refrigerated Trucks or Vehicles:** For the safe transportation of frozen products to retailers, foodservice clients, or direct customers. These vehicles should have refrigeration units to maintain the cold chain.

## 5. Labor and Human Resources

### A. Skilled Labor

- **Food Technologists:** For overseeing food processing, ensuring quality control, and meeting health and safety standards.
- **Production Workers:** Skilled in food processing tasks such as cutting, blanching, cooking, or packaging.
- **Packaging Staff:** To handle the packing and sealing of frozen food products.
- **Maintenance Technicians:** Responsible for the upkeep and maintenance of freezing equipment, cold storage, and other machinery.

### B. Administrative and Support Staff

- **Managers:** To oversee the production process, quality control, supply chain management, and other operational aspects.
- **Sales and Marketing Team:** Responsible for promoting the products and managing customer relations with retailers, wholesalers, and end customers.
- **Warehouse and Logistics Staff:** To manage the inventory, ensure efficient stock control, and organize transportation.

## 6. Utilities and Consumables

### A. Energy and Power Supply

- **Electricity:** High consumption of electricity is required for refrigeration, freezing, and storage operations. It's crucial to ensure a reliable and cost-effective power supply.
- **Backup Power Systems:** As cold storage requires uninterrupted power, backup systems such as generators or UPS (uninterruptible power supply) are essential to prevent product spoilage during power outages.

### B. Water Supply

- **Clean Water:** Water is required for washing and cleaning raw materials, and sometimes for blanching vegetables or fruits.

### C. Cleaning and Hygiene Supplies

- **Cleaning Agents:** For sanitizing processing equipment, workspaces, and storage areas.
- **Personal Protective Equipment (PPE):** Gloves, aprons, hairnets, and face masks for staff handling food to maintain hygiene standards.

## 7. Financial Inputs

### A. Investment in Infrastructure

- **Land:** You'll need land to build the manufacturing facility, storage units, and the office space.
- **Facility Construction:** Building the plant, cold storage, processing units, and packaging areas.

### B. Licensing and Regulatory Costs

- **FSSAI Certification:** Required for food-related businesses in India, including food manufacturing and storage.
- **Other Regulatory Permits:** Local permits, environmental clearances, labor licenses, and safety standards certification.

## 8. Marketing and Sales Materials

### A. Branding and Packaging Design

- **Logo and Brand Identity:** Create a recognizable logo, brand name, and packaging design to appeal to consumers.
- **Product Catalogs or Brochures:** For retail and wholesale marketing efforts.

### B. Promotional Materials

- **Digital Marketing:** Website, social media pages, online advertisements, and email marketing campaigns to reach potential customers.
- **Sales Collateral:** Flyers, posters, and in-store promotional materials for retailers.

## 7. OPERATIONS AND EXECUTION PROCESS

### A. Sourcing of Raw Materials

- **Local Sourcing:** Establish relationships with local farmers and suppliers to ensure a consistent supply of high-quality raw materials, such as vegetables, fruits, and meat.
- **Seasonal Availability:** Plan the production schedule around the seasonal availability of raw materials, especially for fruits and vegetables.





Sr. No.	Activity	Time Required (in months)
1	E M Registration & approval	1
2	Financial/Loan from Banker or Financial Institutions	2
3	Power connection/Building construction Six months	6
4	Machinery procurement & Trial run.	2
5	Recruitment of Staff & Labour	1
5	Actual commercial production	1
6	Total (some activities shall run concurrently)	13

## 10. COST OF PROJECT

Project Cost		
Sr. No	Particulars	Annual Expenses (Rs. in lakhs)
1	Land	-
2	Building (Rented)	1.50
3	Plant & Machinery	7.95
4	Equipment and Furniture Exp.	0.85
5	Misc. Fixed Asset	0.02
6	Preoperative & Preliminary Exp.	0.05
7	Working Capital	7.61
	<b>Total Project Cost</b>	<b>17.98</b>

## 11. MEANS OF FINANCE

Sr. No.	Particulars	Annual Expenses (Rs. in lakhs)
1	Promoter's contribution	7.19
2	Bank Finance	10.79
	<b>Total</b>	<b>17.98</b>

## 12. LIST OF MACHINERY AND EQUIPMENT

### A. MACHINERY

Sr. No	Particulars	Unit	Price per Unit (Rs. in lakhs)	Total Amount (Rs. in lakhs)
1	Washing Machine	1	1.200	1.200
2	Blanching Machine	1	2.000	2.000

3	Peeling and Cutting Machine (Automatic)	1	0.750	0.750
4	Blast Freezer	1	3.000	3.000
5	Weighing-scales, sealing machine, Vaccum packaging machine etc.	1	1.000	1.000
<b>Total Amount</b>			-	<b>7.950</b>

## B. FURNITURE & EQUIPMENT

Sr. No	Particulars	Unit	Price per Unit(Rs. in lakhs)	Total Amount (Rs. in lakhs)
1	Gloves, masks, Instruments, cuttleries etc.	0	0.00	0.05
2	Office Set Up (Chair, Table, and Work Tables)	-	0.00	0.30
3	Storage cabinets, bins, freezer etc.			
	<b>Total Rs.</b>			<b>0.85</b>

The availability of raw materials and equipment from local manufacturers is a promising advantage for the entrepreneur. Choosing the right mix of products and suitable machinery and tooling to facilitate modern and flexible processes is essential. Here are some of the suppliers of business equipment and raw materials an entrepreneur can consider:

### 1. Shiv Shakti enterprises

No. 666/2, Street No. - 8, Chander Lok, Shahdara,  
Delhi, India

### 2. Super Engineering Works

C-263, C Block, Sector 10, Noida, Uttar Pradesh 201301

### 3. Microtech Engineering

Snap Story, Block V, Krishan Vihar, Delhi, 110083

### 4. B.S. Engineering works

Superior Selections, Block RZ, Khayal, Vishnu Garden, New Delhi, Delhi, 110018

Besides these, online platforms such as India Mart, Trade Mart, Amazon, Flipkart, etc., can also be explored for online ordering.

### 13. SALES REALIZATION

Sr. No	Product	Sales in Percentage	INR
1	Frozen Mixed Vegetables	25.0%	1404000
2	Frozen Green Peas	25.0%	
3	Frozen Sweet Corn	15.0%	
4	Frozen Broccoli	10.0%	135000
5	Frozen Potato Snacks	5.0%	
6	Frozen Soya Chap	5.0%	
7	Frozen Vegetable Snacks	15.0%	202500
	<b>Total</b>	<b>100.00%</b>	<b>1741500</b>
<b>Annual capacity at 90%</b>			

### PROFITABILITY PROJECTION

Sr. No	Particulars	Annual Expenses (Rs. in lakhs)
A.	Sales realisation	23.90
B.	Cost of production	
i)	Raw materials	3.75
ii)	Utilities	0.22
iii)	Manpower Cost (Salaries/wages)	11.28
iv)	Administrative expenses	0.07
v)	Packaging Cost	0.30
vi)	Material Lost Cost	0.20
vii)	Selling & distribution expenses	0.06
viii)	Repairs & maintenance	0.00
ix)	Rent	1.50
x)	Interest	0.62
xi)	Misc. expenses	0.00
	<b>Total (B)</b>	<b>18.00</b>
	<b>Gross profit/loss (A – B)</b>	<b>5.89</b>
	<b>Less: Depreciation</b>	<b>0.92</b>
C.	<b>PBIT</b>	<b>4.97</b>

D	Income-tax	-
E	Net profit/loss	4.97
F.	Repayment (Annual)	-0.20
G	Retained surplus (E-F )	5.17

#### 14. BREAK-EVEN ANALYSIS

<b>Fixed cost</b>	
Land & Building Rent	1.50
Depriciation	0.92
Interest	0.62
Manpower	3.38
<b>Total Fixed cost</b>	<b>6.43</b>
<b>Variable cost</b>	
Raw materials	3.75
Utilities	0.22
ManPower	7.90
Administrative expenses	0.07
Selling & distribution expenses	0.06
<b>Total Variable cost</b>	<b>12.00</b>
Contribution margin	20%
Break-Even Point in Value	32.14

#### 15. STATUTORY APPROVALS

To set up a frozen fruit manufacturing unit in Uttarakhand, the following statutory approvals are typically required:

1. **Factory License:** Issued by the Directorate of Factories, Uttarakhand, this is necessary for the legal operation of the manufacturing facility.
2. **FSSAI License:** The Food Safety and Standards Authority of India (FSSAI) approval ensures compliance with food safety regulations for manufacturing, packaging, and selling food products.
3. **Pollution Control Board Consent:** Approval from the Uttarakhand Environment Protection and Pollution Control Board (UEPPCB) is needed to ensure that the manufacturing unit complies with environmental regulations.
4. **GST Registration:** A Goods and Services Tax (GST) registration is mandatory for all businesses involved in the production and sale of goods, including frozen fruits.

5. **Labour Law Compliance:** Registration under relevant labor laws, such as the Shops and Establishments Act, and compliance with the Employees' Provident Fund (EPF) and Employees' State Insurance (ESI) schemes is required.

These approvals ensure the business operates legally, ethically, and in compliance with local and national regulations.

## 16. TRAINING CENTERS AND COURSES

In India, there are several training centers and institutions that provide education and skill development for food processing, including frozen fruit manufacturing. Here are some key options:

1. **National Institute of Food Technology Entrepreneurship and Management (NIFTEM) – Haryana**  
NIFTEM offers specialized courses in food processing and entrepreneurship, including freezing and cold storage techniques. They provide training and workshops that cover the technical and business aspects of frozen food manufacturing.
2. **Central Food Technological Research Institute (CFTRI) – Mysore**  
CFTRI is a leading research institute under the Council of Scientific and Industrial Research (CSIR). They offer various training programs, including those related to fruit and vegetable processing, freezing, and preservation technologies.
3. **Food Processing and Preservation Training Centre (FPPTC) – Delhi**  
This government-supported center provides hands-on training in food processing, including frozen fruit products, packaging, and quality control.
4. **Indian Institute of Crop Processing Technology (IICPT) – Tamil Nadu**  
IICPT offers training and consultancy in the area of food processing, with a focus on crop-based products like fruits and vegetables. They also conduct workshops and programs on freezing technologies and packaging.
5. **State Agricultural Universities and Institutes**  
Many state-level agricultural universities in India, such as the University of Agricultural Sciences (UAS) in Karnataka or Punjab Agricultural University (PAU), offer specialized courses, workshops, and training sessions related to fruit processing, including freezing technologies.

These institutions offer practical and theoretical training that can help individuals and businesses get a better understanding of frozen fruit manufacturing, from processing to marketing.

Entrepreneurship programs that help run businesses successfully are also available from institutes like the Entrepreneurship Development Institute of India (EDII) and its affiliates all over India.

## **Disclaimer**

Only a few machine manufacturers are mentioned in the profile, although many machine manufacturers are available in the market. The addresses given for machinery manufacturers have been taken from reliable sources, to the best of knowledge and contacts. However, no responsibility is admitted, in case any inadvertent error or incorrectness is noticed therein. Further the same have been given by way of information only and do not carry any recommendation.