Introduction

India is emerging as one among the fastest growing countries for Cold Chain Industry

At present, India is largest producer of milk, second largest producer of fruits & vegetables, food grains and marine products and fifth largest producer of meat & meat products. Presently, India is self-sufficient in food grain production and its horticulture production has grown at a phenomenal pace from 146 million tonnes in 2001 to 314 million tonnes in 2018-19. Currently at a nascent stage, the Indian cold chain market continues to emerge driven by increased focus on overall improvement of quality & product sensitivity, changing consumption patterns, growth in organized retail, urbanization, changes in lifestyles, growing demand for nutraceuticals, government initiatives and growing pharma sector.

As a result of Government of India's continuous efforts on cold chain development, the value chains are developing at an accelerated pace. However, there is a huge gap between existing capacity & requirement of cold chain infrastructure. The sector offers private participation in the growing untapped market in creation of storage facilities at the farm level, transportation and food processing units.

This report gives an overview of the cold chain sector in India covering need for cold chains, growth drivers, government support and incentives, present scenario, key challenges, opportunities & outlook.

Acknowledgement

Savills India would like to acknowledge and thank various organizations and many experts from Savills, who provided the insights and expertise that greatly assisted the research.

Our special thanks to Mr. Mansur Mehta, Managing Director, Coldrush Logistics, Mr. RL Brahmaprakash, Head-Projects, Bigbasket and Mr. Ravi Kannan, CEO- Martin Technology for their expert opinions and testimonials that enriched the insights of the report.
Need for Cold Chains in India

India’s Large and Diverse Farm Sector - Need for Cold Chains

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<th></th>
</tr>
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<tbody>
<tr>
<td>291.95</td>
<td>187.7</td>
<td>314.5</td>
<td>13.7</td>
<td>7.45</td>
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</tr>
<tr>
<td>million tonnes</td>
<td>million tonnes</td>
<td>million metric tonnes</td>
<td>million tonnes</td>
<td>million tonnes</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>World Rank</th>
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<th>1st</th>
<th>2nd</th>
<th>2nd</th>
<th>5th</th>
</tr>
</thead>
</table>

On an Upward Trajectory: Cold Chain Logistics in India

Gross Value Added (GVA) by Food Processing Industries at Constant Prices (2011-12) in USD Billion

<table>
<thead>
<tr>
<th>Year</th>
<th>2013-14</th>
<th>2015-16</th>
<th>2017-18</th>
</tr>
</thead>
<tbody>
<tr>
<td>GVA-Agriculture, Forestry and Fishing</td>
<td>275.0</td>
<td>264.4</td>
<td>280.8</td>
</tr>
<tr>
<td>Food Processing Industries (FPI)</td>
<td>22.2</td>
<td>26.3</td>
<td>29.3</td>
</tr>
</tbody>
</table>

Source: Ministry of Food Processing Industries (MoFPI), Government of India

Percentage Share of Food in Total Exports from India

<table>
<thead>
<tr>
<th>Year</th>
<th>2015-16</th>
<th>2016-17</th>
<th>2017-18</th>
<th>2018-19</th>
<th>2019-20*</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.30%</td>
<td>11.20%</td>
<td>11.60%</td>
<td>10.70%</td>
<td>8.90%</td>
<td></td>
</tr>
</tbody>
</table>

Source: National Accounts Division, Central Statistics Office, Govt. of India

* April - November
# Requirement of Cold Chain in India - Existing & Requirement

## Cold Chain Infrastructure Status & Gap

<table>
<thead>
<tr>
<th>Cold Chain Component</th>
<th>Existing Capacity</th>
<th>Approximate Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated Pack Houses</td>
<td>250 numbers</td>
<td>70,000 numbers</td>
</tr>
<tr>
<td>Reefer Trucks</td>
<td>&lt; 10,000 numbers</td>
<td>62,000 numbers</td>
</tr>
<tr>
<td>Cold store (Bulk &amp; distribution hubs)</td>
<td>32 Million Tonnes</td>
<td>35 Million Tonnes</td>
</tr>
<tr>
<td>Ripening Chambers</td>
<td>800 numbers</td>
<td>9,000 numbers</td>
</tr>
</tbody>
</table>

**Source:** Ministry of Food Processing Industries (MoFPI), Government of India

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## Growth Drivers

1. **Growing Organized Retail**
2. **Increased focus and quality & product sensitivity**
3. **Proactive policies & government support**
4. **Growth in processed foods**
5. **Growing Pharma Sector**
6. **Urbanization, changes in lifestyles**
7. **Growing demand for Nutraceuticals food**
8. **Change in farming patterns**
9. **Consumerism**
Cold Chain Categories, end-user segments and Infrastructure

**Cold Chain Infrastructure**

<table>
<thead>
<tr>
<th>Type of Warehouse</th>
<th>Key Products</th>
<th>Technology Usage</th>
<th>End-user Segment</th>
</tr>
</thead>
</table>
| Temperature Controlled Warehouse (TCW) | • Fruits & Vegetables  
• Meat & Poultry  
• Seafood  
• Dairy Products | • Ordinary Cold Storage  
• Controlled Atmosphere Cold Storage  
• Gas Controlled Cold Storage  
• Deep Freezer Storage | • Wholesalers  
• Organized Retailers  
• Food Service  
• Others |
| Temperature Controlled Vehicles (TCV) | • Meat & Poultry  
• Seafood  
• Dairy Products  
• Pharma Products  
• Confectionery  
• Fruits & Vegetables  
• Pharma Products  
• Packaged Food  
• Meat & Poultry  
• Seafood | | |
| Value Added Services (VAS) | | | |

In India, the cold chain sector is termed as the sunrise sector gauging its indispensability in an industry’s growth and its investment potential. The major driving force behind the growth of cold chain facilities in India will be the growth in end-user industries. As mentioned in this report, cold chain has a host of industries as users and any palpable growth in these industries will necessitate the development of cold chain industry in India.

Today, Indian pharmaceutical industry is growing leaps and bounds and is carving a niche for itself in the global pharma terrain. The demand for pharma cold chain logistics is bound to increase in the next few years backed by growing healthcare penetration in the country and newer innovations in the pharma industry that necessitate the need for efficient cold chain logistics in pharmaceutical industry.

Similarly, Indian dairy industry is one of the biggest user industries for cold chain logistics in India. Dairy sector in India presents a vast opportunity for cold chain industry to tap as the need for high quality milk & milk products rises in India.

Such changes have led to a massive spurt in the food service industry, consequent to which the cold chain requirements by the industry have also augmented.

The growth of this sector will result in demand for more skilled workforce in various realms such as drivers, forklift / reach truck operators and refrigeration technicians. In this context, the government’s Skill India Initiative with major focus on training and skilling will help boost the sector in a big way.

India needs a more effective, efficient and well-thought-out cold storage infrastructure. The technology of construction has undergone a phenomenal change from conventional brick wall construction to sandwich insulated panel and reinforced concrete (RCC) structures to pre-engineered buildings (PEB) steel structures.
Geographies for Cold Chain Interventions in India

On an Upward Trajectory: Cold Chain Logistics in India
Government support and Incentives

- **FDI**
  - 100% FDI allowed through automatic route

- **Viability Gap Funding**
  - Up to 40% of the project cost

- **Infrastructure Status**
  - Since 2011-12, cold chain has been given infrastructure status

- **Lower GST for Raw and Processed Products**
  - Nearly 80% of food products are covered in lower tax slab of 0%, 5% and 12%

- **Profit Linked Tax Holiday**
  - Under Section 80 IB and investment linked deduction under Section 35 AD of Income Tax Act, 1961

- **Incentives for Creation of Infrastructure**
  - Incentivizing creation of infrastructure, expansion of Processing Capacity and developing technology to convert raw produce into value added products

- **Special Fund**
  - Setting up of a Special Fund of USD 271 million in National Bank for Agriculture and Rural Development (NABARD) to provide affordable credit for designated Food Parks and agro-processing units

- **Exemption from Service Tax**
  - Cold Chain services of preconditioning, pre-cooling, ripening, waxing, retail packing, labeling of fruits and vegetables exempted from service tax

- **Excise Duty Exemption**
  - Refrigeration machineries and parts used for installation of cold storage, cold room or refrigerated vehicle exempt from Excise Duty

- **Custom Duty @ 5%**
  - Concessional rate of custom duty @ 5% on imported equipment under the project import benefits

- **External Commercial Borrowings**
  - Cold chain projects eligible for External Commercial Borrowings

- **Priority Sector Lending**
  - Classifying loan to food & agro-based processing units and Cold Chain under agriculture activities for Priority Sector Lending

- **Assisting Creation of Skill Infrastructure**
  - Assisting creation of skill infrastructure in Food Processing Sector and skill development initiatives through the sector

- **Note:**
  - USD to INR exchange rate of 73.75 (Jan to Dec-2020 average) was taken to arrive at the values in USD
Pradhan Mantri Kisan SAMPADA Yojana

Government of India (GOI) has approved a new Central Sector Scheme – Pradhan Mantri Kisan SAMPADA Yojana (Scheme for Agro-Marine Processing and Development of Agro-Processing Clusters) with an allocation of USD 813 million for the period 2016-20.

PM Kisan SAMPADA Yojana is a comprehensive package which will result in creation of modern infrastructure with efficient supply chain management from farm gate to retail outlet.

This scheme is expected to leverage investment of USD 4.2 billion for handling of 334 lakh MT agro-produce valued at USD 14.1 billion, benefiting 20 lakh farmers and generating 530,500 direct/indirect employment in the country by the year 2019-20.

Schemes will be implemented under PM Kisan SAMPADA Yojana

01 | Mega Food Parks
02 | Integrated Cold Chain and Value Addition Infrastructure
03 | Creation/ Expansion of Food Processing/ Preservation Capacities (Unit Scheme)
04 | Infrastructure for Agro-processing Clusters
05 | Creation of Backward and Forward Linkages
06 | Food Safety and Quality Assurance Infrastructure
07 | Human Resources and Institutions

Note: USD to INR exchange rate of 73.75 (Jan to Dec-2020 average) was taken to arrive at the values in USD.

On an Upward Trajectory: Cold Chain Logistics in India

On an Upward Trajectory: Cold Chain Logistics in India

With the growth in economy, the consumption of fruits and vegetable is on ascent in India. The ever increasing demand for fruits, vegetables, dairy products, meat and poultry, has necessitated the need to augment the cold storages and cold transportation capabilities in the country.

At Bigbasket, substantial portion of the business comes from these commodities. It has been the policy of Bigbasket to source most of our fruits and vegetables directly from the farmers. It is always a challenge to ensure that the quality does not suffer in transit from farm to plate. Cold storages, refrigerated vehicles, cold boxes, freezers and gel packs are all an integral part of our cold chain.

In addition, dairy products, meat and poultry are also important elements in our assortment. We have been investing heavily in setting up cold storages and providing the right infrastructure for the shipment of these items to our customers. Our innovations team is working continuously to get the right mix for the cold chain.

Ultimately, the customer satisfaction in the F&V and meat business largely depends on the quality of cold storage and supply chain.

The government of India with the new reforms in the farm sector is encouraging the private companies to play a big role in the augmentation of cold chain in India.

We are sure that the thought leadership research report on Cold chain logistics in India by Savills will provide answers to many of the challenges faced by the food industries.

We congratulate the Savills team for taking up such relevant issue for their research.
Cold Storage in India-
Present Scenario

A warehouse is used to store goods; a refrigerated warehouse is used to store those goods which can only be stored at certain temperatures to keep them fresh.

The cold storage market in India is highly fragmented with over 3,000 players. The country has 7,916 cold storages with a capacity of 36,229,675 metric tonnes spread across the states as of 2018. Uttar Pradesh, West Bengal, Gujarat and Punjab together accounted for 72% of the total storage capacity in India.

State Wise Cold Storage Capacity (as on March-2018)

<table>
<thead>
<tr>
<th>State</th>
<th>Number of Cold Storages</th>
<th>Capacity (Metric Tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uttar Pradesh</td>
<td>2,368</td>
<td>1,470,000</td>
</tr>
<tr>
<td>West Bengal</td>
<td>672</td>
<td>250,000</td>
</tr>
<tr>
<td>Gujarat</td>
<td>890</td>
<td>265,000</td>
</tr>
<tr>
<td>Punjab</td>
<td>672</td>
<td>250,000</td>
</tr>
<tr>
<td>Andhra Pradesh and Telangana</td>
<td>452</td>
<td>160,000</td>
</tr>
<tr>
<td>Madhya Pradesh</td>
<td>302</td>
<td>210,000</td>
</tr>
<tr>
<td>Haryana</td>
<td>352</td>
<td>240,000</td>
</tr>
<tr>
<td>Bihar</td>
<td>306</td>
<td>210,000</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>603</td>
<td>240,000</td>
</tr>
<tr>
<td>Madhya Pradesh and Bihar</td>
<td>608</td>
<td>240,000</td>
</tr>
<tr>
<td>Maharashtra and Haryana</td>
<td>954</td>
<td>650,000</td>
</tr>
<tr>
<td>Others</td>
<td>1,460</td>
<td>900,000</td>
</tr>
<tr>
<td><strong>Total Capacity</strong></td>
<td><strong>36,229,675</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: Ministry of Food Processing Industries (MoFPI), Government of India

Cold chain warehousing is expected to witness significant growth over the next few years. A significant demand for temperature-controlled storage and distribution will be witnessed from the pharmaceutical sector particularly for the COVID-19 vaccines and API drug formulations. Growth in the organized food delivery, e-commerce remains as a key driver for cold chain sector in India. Food retailing has come of age and the growing penetration of organized food retail in the country has dictated the development of efficient cold chain supply management. Other factors acting as catalysts for the cold chain industry includes rising emphasis on reducing food wastage and government initiatives like FDI relaxation.

The cold storage market is currently very fragmented with very few players in the organized sector. The cold storage industrial clusters are concentrated in major metro cities. We see huge potential in Tier I and Tier II cities in the next 2-3 years. We see uptick in investment activity, the industry likely to attract significant capital inflow and new capacity creation.

On an Upward Trajectory: Cold Chain Logistics in India

Ravi Kannan
CEO
Martin Technology
Cold Chain Logistics in India - is on Fire?

Cold Chain is a system of keeping perishable commodities at their recommended temperature from the point of manufacturing to the beneficiary, this includes refrigerated transport, distribution and retail display infrastructure.

As of August 2020, there are around 282 approved Cold Chain projects in India, in which 202 are operational and 78 are under implementation. The product specific Cold Chain projects mainly include fruits & vegetables, dairy products, meat & poultry, mixed use, ready to eat/ready to cook and marine products.

As on September 2020, the government of India has approved 27 cold chain projects in 11 states with a grant-in-aid of USD 28 million under the Pradhan Mantri Kisan Sampada Yojana to increase the efficiency and sustainability in country’s food supply chain.

Note: USD to INR exchange rate of 73.75 (Jan to Dec-2020 average) was taken to arrive at the values in USD
Cold Chain Projects in India

State & Sector Wise Cold Chain Projects in India (as of Aug-2020)

On an Upward Trajectory: Cold Chain Logistics in India

Fruits & Vegetables (F&V) 121 | 28
Dairy 46 | 24
Ready to Eat (RTE) 3 | 4
Marine 14 | 14
Irradiation 4 | 3
Meat & Poultry 8 | 5
Mixed 8 |
Total - 208 (Operational) | 78 (Ongoing)

Source: Ministry of Food Processing Industries (MoFPI), Government of India
Mega Food Parks-to boost ailing Farm and Dairy Sector

Mega Food Park is a scheme of the Ministry of Food Processing (part of the Government of India) with the aim of establishing a “direct linkage from farm to processing and then to consumer markets” through a network of collection centers and primary processing centers. Mega Food Park Scheme has a cluster-based approach developed on a hub and spokes model. This scheme provides a capital grant at the rate of 50% of the eligible project cost in general areas, and 75% of suitable project cost in North Eastern regions such as Sikkim, Himachal Pradesh, Jammu & Kashmir and Uttarakhand subject to a maximum of USD 7 million per project.

Mega Food Park scheme provide supporting infrastructural facilities (including Common & Core Processing facilities, Ready to Plug & Play, SIP sheds etc.) for food processing & allied industries along with the value chain from the farm to market, which will include creation of infrastructure near the farm, transportation, logistics and centralized processing centers.

As of June-2020, there are 19 operational Mega Food Parks, with a leasable area of 607.19 acres and around 17 ongoing Mega Food Parks with leasable area 625.25 acres across the States as per the data released by Ministry of Food Processing Industries.

Many private Mega Food Parks such as Patanjali Food & Herbal Park, Himalayan Food Park, Srinia Food Park, Paithan Mega Food Park, Satara Mega Food Park are operational. Many private players anticipated to enter this segment to bring about the much needed growth of the sector.

Note: USD to INR exchange rate of 73.75 (Jan to Dec-2020 average) was taken to arrive at the values in USD.
**Distribution Mega Food Parks**

### Operational

- Nos: 19
- Leasable Area (acres): 607.19

**Major States:**
- Maharashtra, Uttarakhand
- Karnataka and Andhra Pradesh

### Under Implementation

- Nos: 18
- Leasable Area (acres): 625.28

**Major States:**
- Kerala, Odisha, Punjab and Haryana

Leasable Area in Operational Mega Food Parks-State wise

- **Maharashtra:** 14.5%
- **Uttarakhand:** 11.3%
- **Karnataka:** 9.9%
- **Andhra Pradesh:** 9.4%
- **Madhya Pradesh:** 7.8%
- **Rajasthan:** 7.1%
- **West Bengal:** 7.1%
- **Gujarat:** 6.3%
- **Karnataka:** 4.8%
- **Maharashtra:** 4.6%
- **Telangana:** 5.3%
- **Others:** 21.6%

**Others:** 22.6%

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State wise Leasable Area (in acres) of Mega Food Parks as of Sep-2020

<table>
<thead>
<tr>
<th>State</th>
<th>Leasable Area (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maharashtra</td>
<td>146.4</td>
</tr>
<tr>
<td>Uttarakhand</td>
<td>71.9</td>
</tr>
<tr>
<td>Kerala</td>
<td>113.3</td>
</tr>
<tr>
<td>Odisha</td>
<td>109.2</td>
</tr>
<tr>
<td>West Bengal</td>
<td>100.9</td>
</tr>
<tr>
<td>Punjab</td>
<td>97.5</td>
</tr>
<tr>
<td>Haryana</td>
<td>94.8</td>
</tr>
<tr>
<td>Madhya Pradesh</td>
<td>79.7</td>
</tr>
<tr>
<td>Rajasthan</td>
<td>75.1</td>
</tr>
<tr>
<td>Bihar</td>
<td>73.7</td>
</tr>
<tr>
<td>Chhattisgarh</td>
<td>68.1</td>
</tr>
<tr>
<td>Gujarat</td>
<td>65.9</td>
</tr>
<tr>
<td>Karnataka</td>
<td>53.5</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>48.3</td>
</tr>
<tr>
<td>Telangana</td>
<td>45.2</td>
</tr>
<tr>
<td>Andhra Pradesh</td>
<td>43.1</td>
</tr>
<tr>
<td>Others</td>
<td>25.6</td>
</tr>
</tbody>
</table>

**Total:** 607.19 Operational (Leasable area in acres) | 625.28 Ongoing (Leasable area in acres)

Source: Ministry of Food Processing Industries (MoFPI), Government of India
State wise number of Mega Food Park projects as of Sep-2020

<table>
<thead>
<tr>
<th>State</th>
<th>Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kerala (2 Projects)</td>
<td></td>
</tr>
<tr>
<td>Karnataka (2 Projects)</td>
<td></td>
</tr>
<tr>
<td>Tamil Nadu (2 Projects)</td>
<td></td>
</tr>
<tr>
<td>Telangana (2 Projects)</td>
<td></td>
</tr>
<tr>
<td>Maharashtra (3 Projects)</td>
<td></td>
</tr>
<tr>
<td>Gujarat (2 Projects)</td>
<td></td>
</tr>
<tr>
<td>Andhra Pradesh (3 Projects)</td>
<td></td>
</tr>
<tr>
<td>MP (2 Projects)</td>
<td></td>
</tr>
<tr>
<td>Himachal Pradesh (1 Project)</td>
<td></td>
</tr>
<tr>
<td>Jammu &amp; Kashmir (1 Project)</td>
<td></td>
</tr>
<tr>
<td>Odisha (1 Project)</td>
<td></td>
</tr>
<tr>
<td>Assam (1 Project)</td>
<td></td>
</tr>
<tr>
<td>Mizoram (1 Project)</td>
<td></td>
</tr>
<tr>
<td>Tripura (1 Project)</td>
<td></td>
</tr>
<tr>
<td>West Bengal (1 Project)</td>
<td></td>
</tr>
<tr>
<td>Arunachal Pradesh (1 Project)</td>
<td></td>
</tr>
<tr>
<td>Manipur (1 Project)</td>
<td></td>
</tr>
<tr>
<td>Nagaland (1 Project)</td>
<td></td>
</tr>
<tr>
<td>Hollando-Mizoram (1 Project)</td>
<td></td>
</tr>
<tr>
<td>Uttarakhand (2 Projects)</td>
<td></td>
</tr>
<tr>
<td>Punjab (3 Projects)</td>
<td></td>
</tr>
<tr>
<td>Haryana (2 Project)</td>
<td></td>
</tr>
<tr>
<td>Rajasthan (1 Project)</td>
<td></td>
</tr>
</tbody>
</table>

Source: Ministry of Food Processing Industries (MoFPI), Government of India
Cold Chain Warehousing Footprint-
North, South, East, West, Central, Northeast Zone

Key Players

North

South

East

West

Central

Northeast

On an Upward Trajectory: Cold Chain Logistics in India

North

South

East

West

Central

North East
Covid-19 Vaccine - likely to stimulate demand for Cold Chain Facilities

With the Covid-19 vaccine roll out in January 2021, Indian government and cold chain private operators are gearing up for storage and delivery of vaccine product. The bulk of vaccines in India will be distributed by the Central Government Universal Immunization Programme (UIP) mechanism. According to the Ministry of Health and Family Welfare, the government expects to receive and utilize 400-500 million vaccine doses for Covid-19 and cover approximately 20-25 crore people by mid-2021. The safe delivery of vaccines for mass immunization against Covid-19 requires huge cold chain facilities in the country as the vaccine product requires refrigeration or frozen condition for storage. India being the second largest country in the world in terms population and with second highest number of Covid cases in the world, it requires about 2-3 years for complete immunization against Covid-19. This will create sustained business opportunities for private cold chain players in storing, transportation and distribution of Covid-19 vaccine product.

Cold Chain for Vaccines- Govt. Support

The government of India has extended financial and technical support to the states and union territories for proper storage of vaccines in the country including in rural areas. Under the programme states and union territories are provided with Ice Lined Refrigerators (ILRs), Deep Freezers (DFs), Walk-in-Coolers (WIC), Walk-in Freezers (WIF), Solar Refrigerators, Cold Box, Vaccine Carrier and Ice Packs for storage and distribution of vaccines. The Government of India has rolled out an Electronic Vaccine Intelligence Network (eVIN) system that digitizes the entire vaccine stock management, their logistics and temperature tracking at all levels of vaccine storage from national to the sub-district.

Details of Cold Chain Equipment Supplied, and Funds Provided in 2019-20

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ice Lined Refrigerators (ILRs)</td>
<td>273</td>
</tr>
<tr>
<td>Deep Freezers (DFs)</td>
<td>122</td>
</tr>
<tr>
<td>Solar equipment</td>
<td>404</td>
</tr>
<tr>
<td>Cold chain maintenance funds provided (USD million) *</td>
<td>0.62</td>
</tr>
</tbody>
</table>

Vaccine Storage Capacity in India as of Dec 2020

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cold-chain points</td>
<td>28,932</td>
</tr>
<tr>
<td>Walk-in coolers</td>
<td>240</td>
</tr>
<tr>
<td>Walk-in freezers</td>
<td>70</td>
</tr>
<tr>
<td>Ice-lined refrigerators</td>
<td>45,000</td>
</tr>
<tr>
<td>Deep freezers</td>
<td>44,226</td>
</tr>
<tr>
<td>Solar refrigerators</td>
<td>294</td>
</tr>
</tbody>
</table>

* Budget for Cold Chain Maintenance is provisioned under Bio-Medical Equipment Maintenance Programme (BMMP).

Note: USD to INR exchange rate of 73.75 (Jan to Dec-2020 average) was taken to arrive at the values in USD.

Source: Ministry of Health and Family Welfare, Govt. of India
Top 5 States with Maximum Storage Capacity as of Dec 2020

<table>
<thead>
<tr>
<th>State</th>
<th>Cold Chain Points</th>
<th>Walk in Coolers</th>
<th>Walk in Freezers</th>
<th>Ice Lined Refrigerators</th>
<th>Deep Freezers</th>
<th>Solar Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maharashtra</td>
<td>3,257</td>
<td>18</td>
<td>6</td>
<td>4,408</td>
<td>4,199</td>
<td>12</td>
</tr>
<tr>
<td>Tamil Nadu</td>
<td>2,599</td>
<td>18</td>
<td>3</td>
<td>2,785</td>
<td>2,677</td>
<td>0</td>
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<tr>
<td>Rajasthan</td>
<td>2,405</td>
<td>14</td>
<td>3</td>
<td>3,522</td>
<td>3,472</td>
<td>18</td>
</tr>
<tr>
<td>Gujarat</td>
<td>2,291</td>
<td>9</td>
<td>2</td>
<td>2,597</td>
<td>2,467</td>
<td>1</td>
</tr>
<tr>
<td>Uttar Pradesh</td>
<td>1,308</td>
<td>30</td>
<td>10</td>
<td>3,574</td>
<td>4,060</td>
<td>17</td>
</tr>
</tbody>
</table>

Source: Ministry of Health and Family Welfare, Govt. of India
Comparison of Indian Cold Chain Industry with Developed Countries

India is one among the top Cold Chain markets Worldwide

The total capacity of refrigerated warehouses worldwide was 666 million cubic meters in 2018 according to the report released by Global Cold Chain Alliance (GCCA). India has reported 150 million cubic meters of refrigerated warehousing in 2018, followed by United States at 131 million cubic meters and China at 105 million cubic meters during the same period.

India demonstrated continued progress in terms of cold storage capacity relative to urban population. As of 2018, India ranked fourth position in terms of per capita availability of cold storage in cubic meter per urban resident, the worldwide country average in 2018 range from 0.09 to less than 0.5 cubic meters per urban resident according to the Global Cold Chain Alliance (GCCA).

India having large number of cold storage facilities (7,916), these are mainly concentrated in few states such as Uttar Pradesh, West Bengal, Gujarat, and Punjab.

The cold storage market in India is highly fragmented with over 3,000 players. The sizes of cold storage warehouses ranged from 15,000-25,000 cubic meters per facility in emerging and developing economies compared to over 100,000 cubic meters in developed economies. The average capacity per warehouse in India stands at 19,651 cubic meters, which is small in comparison with some developed countries such as Australia, United States, Canada, United Kingdom and Belgium.
Indian Cold Chain Industry V/s Developed Countries-Comparative Analysis

<table>
<thead>
<tr>
<th>Parameter</th>
<th>India</th>
<th>Developed Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market Concentration</td>
<td>Fragmented</td>
<td>Concentrated</td>
</tr>
<tr>
<td>Market Penetration</td>
<td>Mostly in Tier I Cities</td>
<td>Well Distributed</td>
</tr>
<tr>
<td>Growth Potential</td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td>Market Attractiveness</td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td>Availability of Skilled labor</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Investment Potential</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Type of Developments</td>
<td>Mostly Grade A</td>
<td>Mostly Grade A</td>
</tr>
<tr>
<td>Average Capacity per Warehouse (m3)</td>
<td>Approximately 20,000</td>
<td>&gt;100,000</td>
</tr>
<tr>
<td>Energy Consumption</td>
<td>8 to 9.5</td>
<td>Approximately 3.0</td>
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<tr>
<td>Cost per Pellet per Month (USD)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Government Support &amp; Incentive Schemes</td>
<td>Yes</td>
<td>Both OPEX &amp; CAPEX</td>
</tr>
<tr>
<td>Operating Model</td>
<td>CAPEX</td>
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</tbody>
</table>

**Note:** USD to INR exchange rate of 73.75 (Jan to Dec-2020 average) was taken to arrive at the values in USD
Key Challenges

Supply Chain Infra Gaps

Seasonality of Operations

Growing Real Estate Cost

Low Capacity Utilization

Uneven Distribution of Capacity

High Initial Investment and High Energy Costs

High Energy Consumption Cost

Operating costs for the cold storage business in India are approximately USD 8.0-9.5 per pallet per month as compared to around USD 3.0 per pallet per month in the West. Electricity expenses alone make up about 25-30% of the total expenses for the cold storage industry in India compared to around 10% in the West. These factors along with high land rentals make the business of setting up of cold storages a high entry barrier.

Rising Real Estate Costs

A fully integrated multi commodity cold storage facility with 5,000 pallets will require an area of an acre to build, which could cost around USD 3.4 million, excluding the cost of land thus constituting 10-12% of the project cost.

Lack of Logistical Support

Cold chain industry in India is fragmented and it will require heavy investment in building technology enabled cold storage facilities to cover entire value chain from procurement to transportation in refrigerated trucks to retail outlets in cities.

Cooling units are not mobile units, hence, location becomes a key factor, and with India’s small land holdings, getting large tract of land to build a cold storage unit becomes a major constraint.
Savills Views on Expected Stakeholder Strategies

Developers
- The Cold Chain industry in India has been shunned for a long time due to the requirement of high initial & operating costs and lack of adequate infrastructure, but this mindset of stakeholders is changing. Domestic and international developers are likely to enter this segment due to growing attractiveness of the sector, and due to their long-term diversification strategy to cover the risk and to create new revenue streams.
- Operating costs for the cold storage business in India are higher compared to the western countries. Operators likely to adopt energy-efficient practices as part of their strategy to reduce the operating costs. These practices include energy recovery systems, water reclamation systems, solar energy, refrigeration plugins, energy-efficient designs of refrigeration equipment and automation are some of the innovative features. In addition, the market is likely to witness adoption of cost-effective technologies like Radio Frequency Identification (RFID), Track Management System (TMS), Order Management Systems (OMS) and Warehouse Management Systems (WMS).
- Developers likely to adopt more effective, efficient, and well-thought-out cold storage infrastructure in order meet the rapid growing demand for cold storage facilities. The technology of construction has undergone a phenomenal change from conventional brick wall construction to sandwich insulated panel and reinforced concrete (RCC) structures to pre-engineered buildings (PEB) steel structures.
- Efforts will be made to introduce the concept of green technology in Cold Chain industry and special emphasis will be laid on development of reefer infrastructure in view of India's exports thrust and potential.
- Developers expand into Tier II & Tier III cities as well. Such changes have led to a massive spurt in the food service industry, consequent to which the cold chain requirements.

Investors
- Investors are confident that Cold Chain is a safe bet for their capital investment. The domestic and offshore funds are expected to diversify their portfolios and continue to invest in high yielding Cold Chain assets and many foreign institutions are exploring opportunities to invest in this growth sector.
- Investors remain focused on facilities supporting ‘First mile delivery’, the growing middle class and young age population in India have become accustomed to e-commerce and door-to-door deliveries, which is furthering the demand for refrigerated deliveries.
- Financial institutions likely to play a major role to encourage the investment in cold chain industry in terms of term loan sanctioning, nominal interest rates and disbursement.

Occupiers/Operators
- A “one-stop shop” model to offer end-to-end logistics solutions has been favored by the Cold Chain industry in India. The Cold Chain industry India is moving towards greater efficiency, optimizing end-to-end logistical progress, providing one stop-shop cold chain solutions, and taking benefit of the growing number of 3PL players.
- The upward trend towards the outsourcing of temperature-controlled logistics will lead to demand for end-to-end supply chain services in this sector. Other than storage and distribution, the Cold Chain operators will be expected to provide value added services like order processing, kitting, packaging, sorting, grading, etc. to create new revenue streams.
- The OPEX model is likely to emerge over the CAPEX model as many cold chain operators may give more attention to cash flow optimization, as it is a better alternative to buying land and building the facility.

Government
- The growth of Cold Chain industry will result in demand for more skilled workforce in various realms such as drivers, forklift / reach truck operators, refrigeration technicians. In this context, the Government’s Skill India Initiative with major focus on training and skilling will help boost the sector in a big way.
- The government should treat temperature-controlled warehousing for non-agricultural commodities at par with infrastructure projects to encourage investments in the cold storage industry.
- Tax benefits are expected from the government on infrastructure upgradation and creation of multimodal logistics hubs.
- The government must take steps towards subsidizing electrical tariffs in order to boost the development of cold chain infrastructure in India.

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- LANDLORD ADVISORY
- MARKET RESEARCH
- SALE & LEASEBACK
- DEVELOPMENT CONSULTANCY
- INVESTMENT BROKERAGE

Savills Competencies & Track Record

- Professionals 24
- Multi Disciplinary Team
  - Management
  - Engineering
  - Finance
  - Economists
- Coverage
  - Successfully executed transactions and advisory across India
- Land Area Transacted
  - 3,000+ acres
- Industrial & Logistics Leasing
  - 80+ Mn Sq. Ft.
- Consulting Assignments
  - 250+ assignments
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