

COLD STORAGE IN INDIA

All the way from farm to fork





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1. WHAT IS COLD STORAGE (CS)?

CS facilities are typically used to stock the following products:

Categorisation of products stored in CS facilities:



FOOD AND GROCERIES (F&G)

Vegetables | Fruits | Dairy Products | Meat | Seafood etc.



HEALTHCARE

Drugs | Pharmaceuticals | Vaccines | Blood etc.



OTHERS

Flowers | Wine | Tobacco | Chemicals etc.



Temperature ranges in a CS facility

A CS facility can enable various temperature-controlled environments based on the products stored as highlighted below:

Typical temperature ranges in a CS facility:

Frozen	BELOW - 18°C	 
Chilled	0°C to 10°C	   
Mildly chilled	10°C to 20°C	   
Normal	>20°C	 

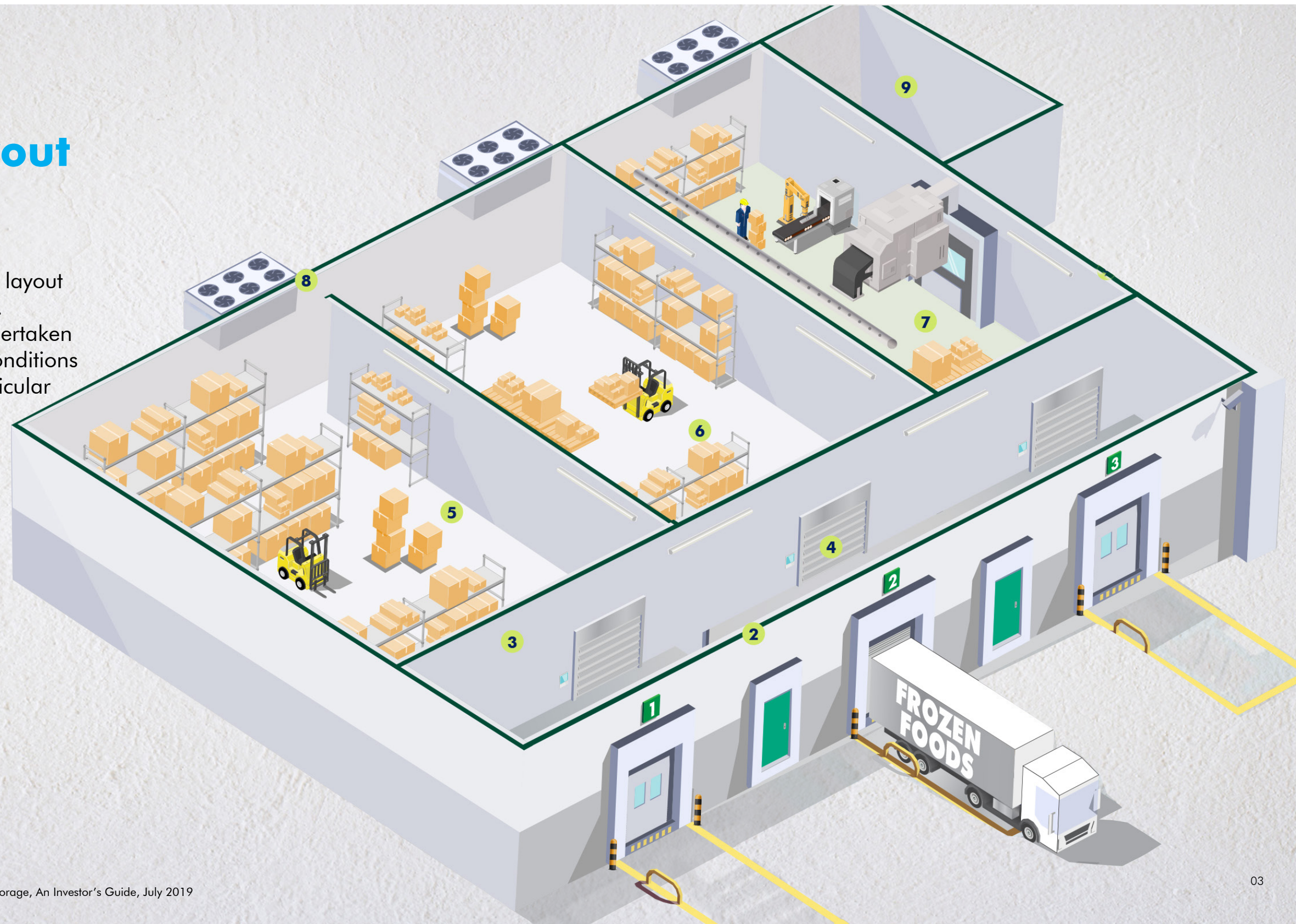
LEGENDS

 Meat	 Dairy products	 Vegetables	 Healthcare
 Seafood	 Wine	 Fruits	 Flowers



The typical layout of a CS facility

Illustrated on the right is a typical layout of a CS facility for F&G purposes. Further customisation can be undertaken depending on the temperature conditions required for the storage of a particular product.



- 1 Dock with Shelter Doors
- 2 Vapour Barrier and Product Staging Area
- 3 Evaporators
- 4 High Speed Roller Doors
- 5 Frozen and Chilled Chambers
- 6 Insulated Floors and Surfaces
- 7 Processing Area
- 8 Condensers
- 9 Compressor Plant

2. WHAT IS THE SIGNIFICANCE OF CS IN INDIA?

CS facilities play an integral role in improving the shelf life of products, thereby reducing wastage. Moreover, following the COVID-19 outbreak, the CS segment is witnessing robust demand on the back of a surge in online grocery and fresh food sales. The graphic below highlights the significance and need for CS facilities in India.



F&G

SIGNIFICANCE IN INDIA

- Largest milk producer globally¹
- 2nd largest food producer globally²
- 6th largest F&G market globally²

NEED FOR CS IN INDIA

- The annual post-harvest loss of major agricultural produce is worth about USD 13.16 billion⁵
- This loss is highest for fruits and vegetables, at 5-16%
- More than 75% of the CS capacity is used for only storing horticulture crops including potatoes⁶



HEALTHCARE

SIGNIFICANCE IN INDIA

- 3rd largest producer of generic medicine globally³; accounts for 20% of the global supply (by volume)³
- Contributes to more than half of the global supply of vaccines³

NEED FOR CS IN INDIA

- At least 25% of the vaccines expire before reaching doctors and patients⁷



OTHERS

SIGNIFICANCE IN INDIA

- The Indian wine industry has an annual turnover of about USD 83 million⁴
- India houses the first Asian Winery outside China that sells 1 million cases in a year⁴

NEED FOR CS IN INDIA

- The market is mostly untapped in India

¹ Agricultural and Processed Food Products Export Development Authority (APEDA), 2018

² Food Safety and Standards Authority of India (FSSAI), 2018

³ Invest India, 2020

⁴ FSSAI, 2018

⁵ Central Institute of Post-Harvest and Engineering and Technology (CIPHET), calculated using production data of 2012-13 at 2014 wholesale prices. Conversion rate adopted: 1 USD = INR 70.38

⁶ Public Information Bureau, 2019

⁷ Immunisation Technical Support Unit, Ministry of Health, 2015

Cold chain infrastructure and gap analysis in India

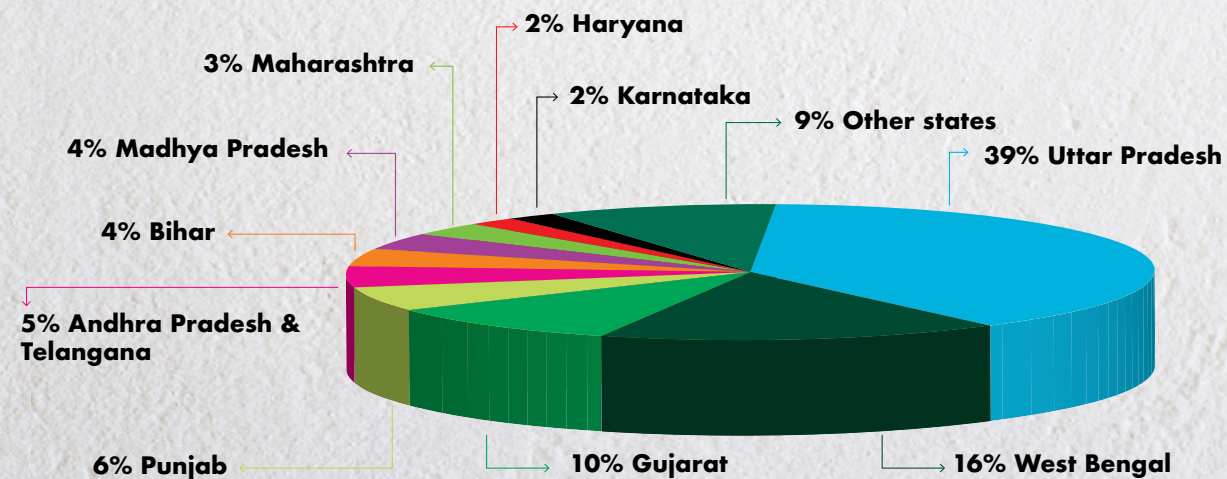
The cold chain network plays a vital role in reducing the loss of the produce and improving efficiency. The figure below highlights the spatial spread of the cold chain infrastructure in India.

CS in India: Current footprint

To improve supply chain efficiency, the government has developed CS facilities across the country over the last decade. **Currently, the overall CS capacity in India stands at about 37-39 million tonnes.** It can be observed from the figure below that the distribution of CS facilities is not uniform. While states such as Uttar Pradesh and West Bengal lead in terms of installed capacity, a considerable lag in terms of transport network results in wastage/spoilage. Similarly, the installed CS capacity is relatively low in Andhra Pradesh, considering that the state leads the country in fruit production, thereby resulting in significant spoilage.

Typically, CS facilities in India are meant for single-purpose storage, resulting in these facilities remaining idle for six months due to seasonality of the produce. An NCCD study in 2015 observed that **only 75% of the installed cold storage capacity is being utilized.**

Top 10 states in terms of the spatial spread of CS facilities / capacity in India:



Total share of the top 10 states
91%

Significant supply gap in cold chain infrastructure in India

While India is already focusing on creating CS facilities across states, there is a considerable lag in terms of other cold chain infrastructure such as pack houses, ripening chambers and reefer freight.

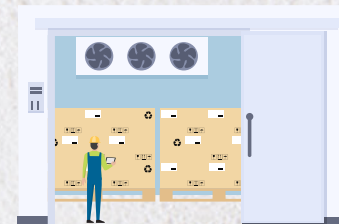
Components of cold chain infrastructure in India



PACK HOUSES

Pack houses are an important component of the cold chain infrastructure; India currently houses about **250 pack houses**.

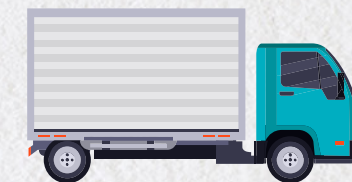
Supply gap for pack houses in India - 99.6%.



RIPENING CHAMBERS

A majority of ripening chambers in India are currently being used only to ripen mangoes and bananas.

Supply gap for ripening chambers in India - 91%



REEFER FREIGHT

India's current capacity of temperature-controlled vans (reefer freight) is about 4.2 million tonnes.

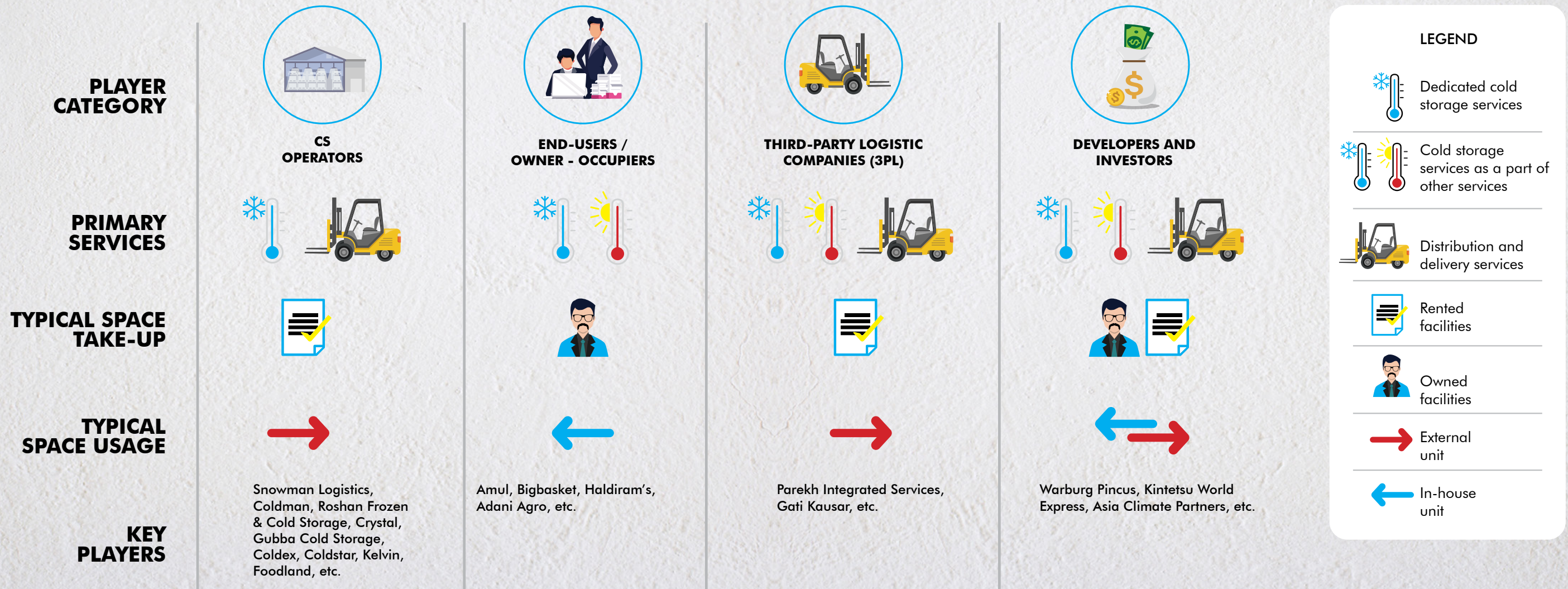
Supply gap for reefer freight vans in India - 85%.

Source: CBRE Research, Q4 2020; ASSOCHAM's Cold Chain Technologies, Transforming Food Supply Chains, May 2017

Current practices in India are focused on the creation of CS facilities, rather than the market linkages of products. For instance, most of the reefer freight in India is presently being used for transporting frozen / imported foods or pharmaceuticals, rather than home-grown fruits and vegetables. Thus, about 85% of CS operators in the country do not have adequate access to the requisite reefer freight services⁸.

3. THE CS SEGMENT IN INDIA: A SNAPSHOT

Players in the Indian CS segment can be broadly classified under the following categories:



LEGEND

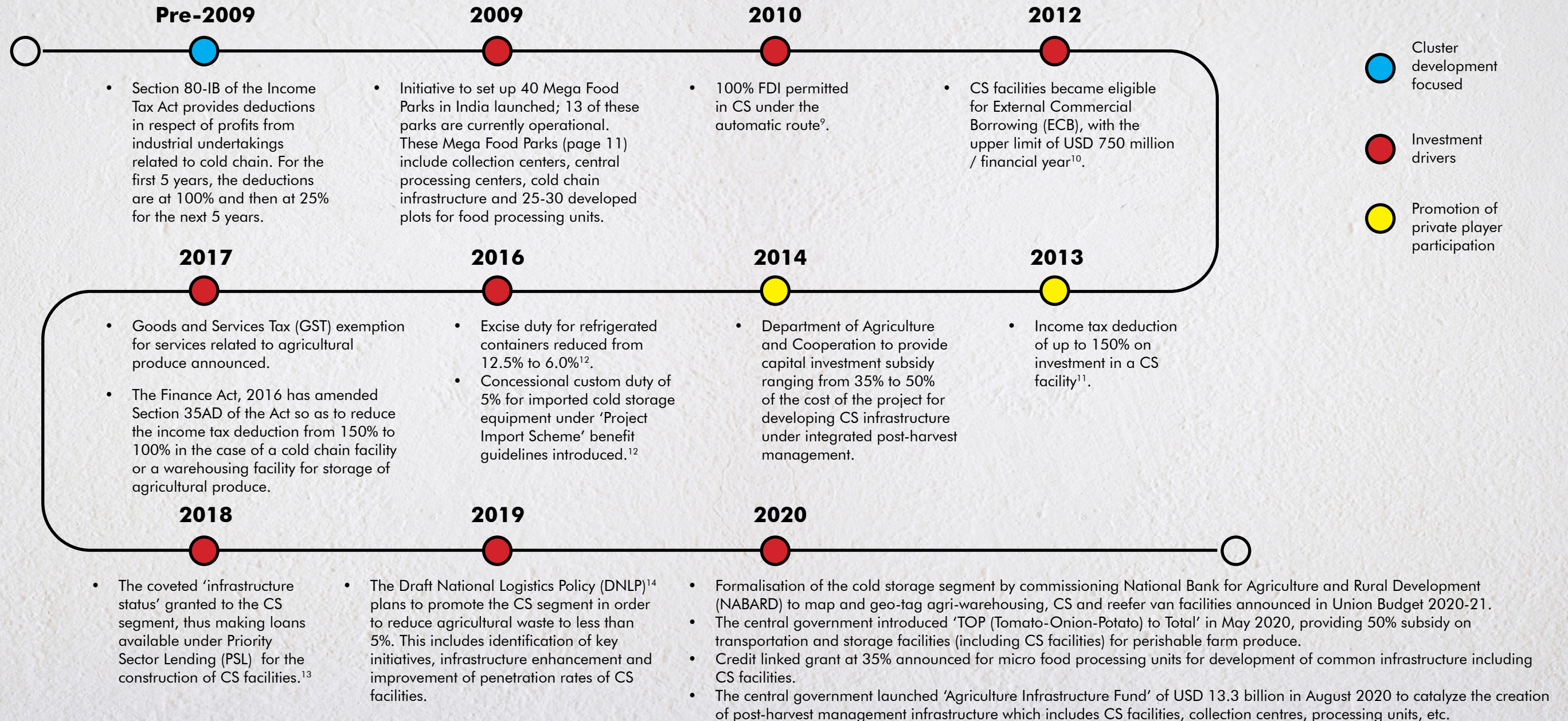
- Dedicated cold storage services
- Cold storage services as a part of other services
- Distribution and delivery services
- Rented facilities
- Owned facilities
- External unit
- In-house unit

Source: CBRE Research, Q4 2020; CBRE's Asia Pacific Cold Storage, An Investor's Guide, July 2019

Note: This snapshot only depicts the typical segments, services and space usage in India; which may vary on a case-to-case basis.

4. GOVERNMENT INITIATIVES TO PROPEL THE SECTOR

A timeline of the government initiatives to promote the CS segment



9. Consolidated FDI Policy, 2010 | 10. Reserve Bank of India, July 2012 | 11. Section 35-AD of Income Tax Act, 1961 | 12. Union Budget 2016-17
 13. Including CS units / CS chains designed to store agriculture produce / products, irrespective of their location; for food and agro-processing up to a limit of INR 100 crore per borrower
 14. Status as on Nov, 2019 - Ministry of Commerce awaiting feedback from related departments on the draft policy

Untapped potential and investment avenues

As mentioned in section 2, there is a huge gap in the cold chain infrastructure which highlights the untapped potential of this segment in India. On the other hand, over the recent years, increasing urbanisation and organised retail food processing and servicing sectors have been accelerating the demand for products that need an efficient cold chain. Following the COVID-19 outbreak, the demand is now being further fuelled by huge omni-channel distribution of F&G across tier I and tier II cities in the country. According to Unicommerce's 'E-Commerce Trends Report 2020', the e-commerce sector has witnessed an order volume growth of 17% since the COVID-19 outbreak until June 2020. Consumer buying patterns and preferences have also changed significantly with categories such as healthcare and F&G seeing an exponential growth, given the rise in the number of first-time online shoppers.

We expect this trend to lead to a rise in private sector participation in the CS segment over the coming years.

Investments in the CS segment in India have usually been undertaken through four primary routes. However, as the segment becomes more organised, investors now have the option to explore other routes as well, as highlighted on the right:



Current investment routes



15. Refer to page 7 for types of players

Table 1: Key deals in the CS segment in India

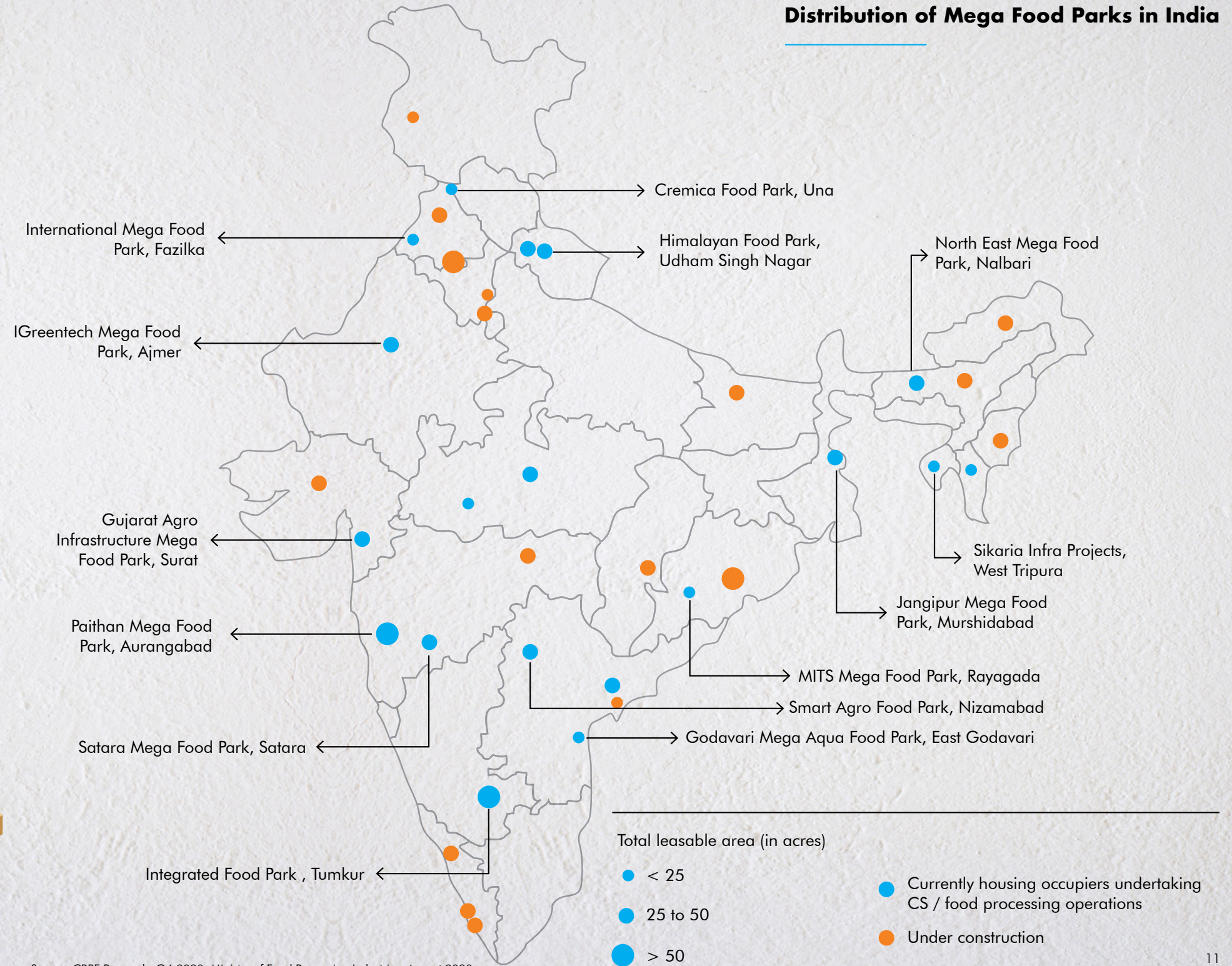
YEAR	INVESTOR	PLAYER TYPE	INVESTMENT VALUE (USD MILLION)	INVESTMENT ROUTE	COMMENTS
2012	Kintetsu World Express	3PL	37	Partnership	Joint venture with Gati for a 30% equity holding
2016	Asia Climate Partners	Investor	34	Partnership	Funding to ColdEx
2016	Warburg Pincus	Investor	125	Acquisition	Acquired Stellar Value Chain
2017	JM Baxi	3PL	70 – 80	Partnership	Plans to set up 7-8 CS facilities across India. These facilities will be managed by Coldman Logistics
2019	Hiranandani	Developers / Investors	288	BTS	Plans to develop BTS industrial units and warehouses with CS facilities in the long term in Chennai. These would be spread over 288 acres for end-users and 3PL players; and would operate on a leasehold model
2019	PepsiCo	End-user / Owner-occupier	74	BTS	Plans to set up a snack manufacturing plant in Uttar Pradesh
2019	Ancon Logistics	3PL	58	Partnership	Plans to set up 8-10 logistics parks with CS facilities on a public-private partnership (PPP) basis across Hyderabad, Bengaluru, Vishakhapatnam, Nagpur and Gurgaon over the next five years
2019	Adani Ports and SEZ	3PL	42	Partnership	Acquired 40.25% share in Snowman Logistics
2020	Snowman Logistics	CS Operator	8	BTS	Plans to set up new CS facilities in West Bengal and Tamil Nadu; also to double the capacity of CS facility in Andhra Pradesh

Mega Food Parks - catalyst for the CS segment

One of the chief initiatives undertaken by the government to reduce post-harvest loss was to develop Mega Food Parks, which aim to establish a robust food processing industry with efficient CS infrastructure. These 37 Mega Food Parks are currently at various stages of implementation / operation as mapped on the right:



Distribution of Mega Food Parks in India



Source: CBRE Research, Q4 2020; Ministry of Food Processing Industries, August 2020

5. WHAT'S INHIBITING THE GROWTH OF THE CS SEGMENT IN INDIA?

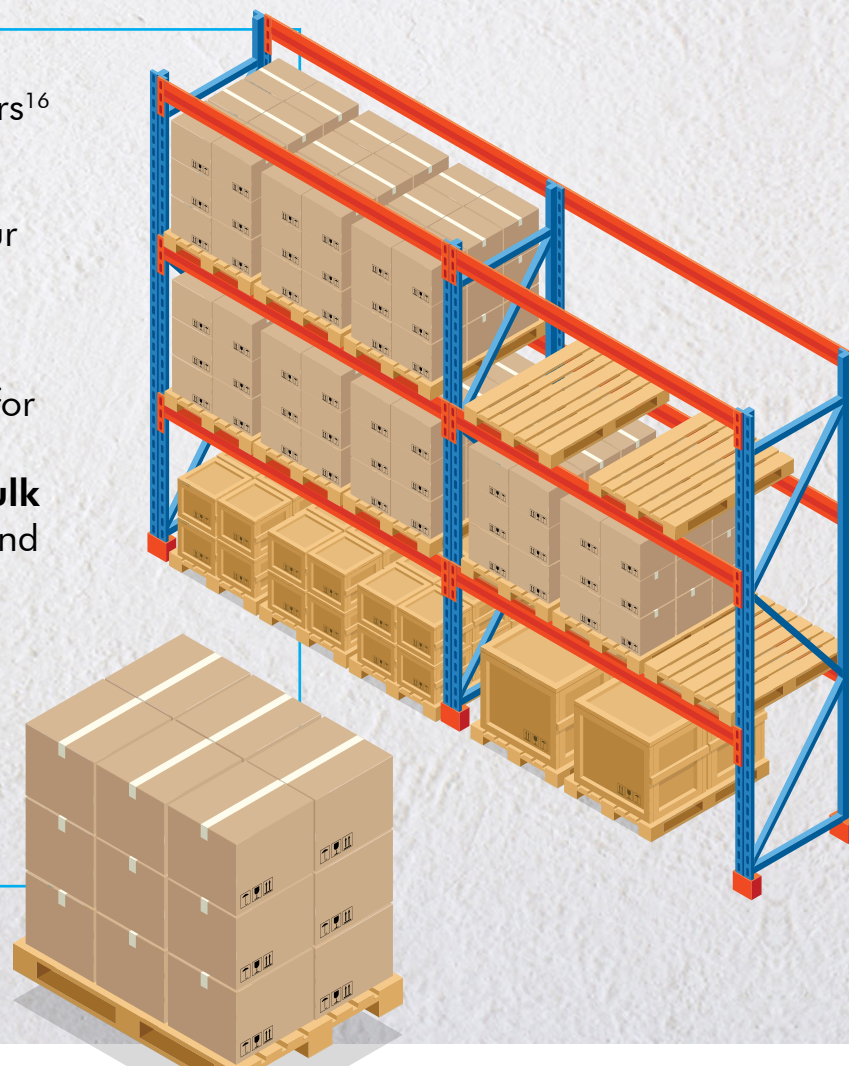
Regardless of the aforementioned government initiatives and the growing global / domestic investment flow, the CS segment in India continues to face multiple challenges across the supply chain.

Major challenges prevailing across the Indian CS segment

Industry-level challenges:

CHALLENGE

1. Dominance of **unorganised** players¹⁶
2. Insufficient **training, skilling and awareness** among farmers/ labour / management about handling temperature-sensitive products
3. **Lack of focus** on the need for CS for products **other than horticulture crops; focus of CS on single / bulk products** such as onions, chillies and potatoes
4. **Inadequate CS capacities in comparatively more humid southern states**



WHAT'S THE SOLUTION?

A **national scheme** should be introduced that focuses on:

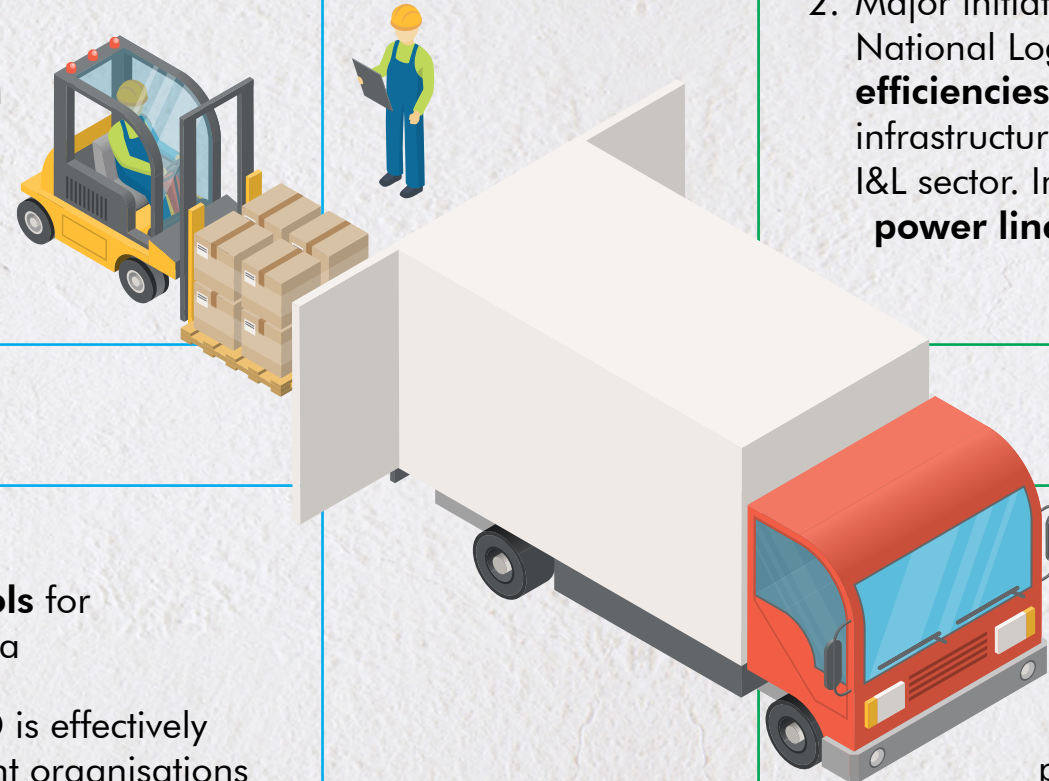
1. Attracting major global / domestic investors by:
 - Further **relaxing investment norms**
 - Clearing **regulatory compliances**
 - Introducing **product-specific protocols**
 - Providing **single-window clearance** for approvals
2. Improving skills through:
 - **Training and skill** development programmes
 - Focusing on **tech-oriented training**
3. Providing **incentives for product-specific CS facilities**, with specific focus on products sold via online retail channels
4. **Need for a multi-chamber CS facility network** to ensure year-round utilisation, especially closer to farms / reefer freight grids

16. A share of about 90% of total I&L segment, CARE Rating, 2018

Infrastructure constraints:

CHALLENGE

1. **Uneven distribution** of CS facilities – A majority of CS facilities are currently located only at production points, creating an inefficient cold chain network
2. **Lack of support infrastructure** in remote cities including an effective transport system and constant power supply for CS facilities. Even with a power peak deficit of 0.8%¹⁷ in India, uninterrupted power is still an issue



WHAT'S THE SOLUTION?

1. Focus on **non-conventional / hybrid systems** for cold chain should be encouraged
2. Major initiatives such as Bharatmala Pariyojana, Sagarmala¹⁸ and Draft National Logistics Policy (DNLP)¹⁹ **are expected to optimize logistics efficiencies and improve connectivity** by promoting multi-modal infrastructure by increasing the share of railways and waterways in the I&L sector. Initiatives should be taken to provide **fail-safe back-up power lines** to ensure uninterrupted power supply

Other constraints:

CHALLENGE

1. **Current inadequate standards / protocols** for constructing / operating a CS facility in India
2. **Funding constraints** - Currently, **NABARD** is effectively limited to funding state / central government organisations
3. **Lack of modern tech** – A majority of the required equipment within cold chain infrastructure in India is currently imported, with limited indigenous production

WHAT'S THE SOLUTION?

1. The government should come up **with comprehensive standards / protocols** more suitable for India's topography
2. NABARD should be allowed to refinance banks / private sector entities as well. **Preferential interest rates** for funding cold chain and grant of priority lending status to the sector are a few measures that can be considered
3. **Increased R&D** investment which focuses on creating low-cost, indigenous equipment should be encouraged. Relaxation of custom duties applicable on post-project tech is also recommended

We expect that addressing these challenges through regular policy interventions would boost global investment in the CS segment, leading to increased regularisation and efficiency over the medium to long term.

6. WHAT DOES THE FUTURE HOLD FOR THE CS SEGMENT IN INDIA?

The CS segment in India is expected to witness significant growth over the next few years on the back of a strong consumer and industrial base.

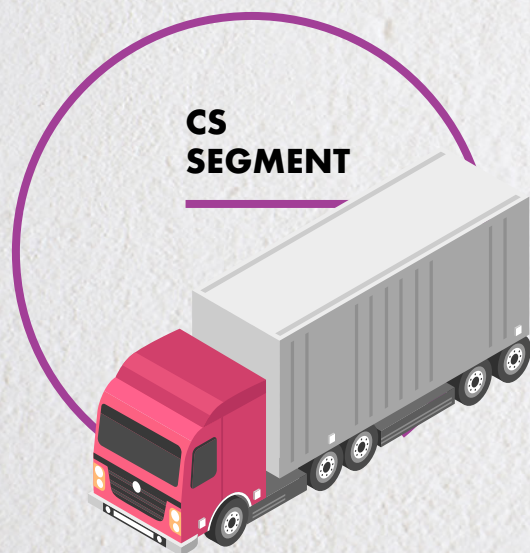
Present and future market drivers of the CS segment in India:



KEY MARKET DRIVERS	2019	2023	IMPACT
Total population ²⁰ (in billion)	1.37	1.42	OFD revenues in India likely to grow by more than 60% by 2023.
% of population aged 15-64 ²²	67.1	68.0	↓
Revenue from Online Food Delivery (OFD) ²³ services (in USD billion)	7.7	12.5	Increasing demand for OFD services likely to be driven by the growing preference for doorstep delivery of products since the COVID-19 outbreak.
			+
Value of the cloud kitchen industry ²⁴ (in USD billion)	-	1.05	The growing young and working-age population prefers healthier food options without preservatives, thus requiring CS facilities to ensure fresh delivery. Additionally, India culturally prefers fresh produce , thereby further boosting the need for setting up CS facilities close to residential areas.
			+
			Emergence of the cloud kitchen ²¹ concept also likely to boost demand for CS facilities.



KEY MARKET DRIVERS	2017	2023	IMPACT
Value of the F&G industry ²⁵ (in USD billion)	-	829	Size of the online F&G retail industry likely to quadruple by 2022. + Dairy industry size likely to more than double by 2023. ↓ Projected growth of F&G, online F&G, dairy, food processing and pharma industries over the next three to five years likely to drive demand for CS and reduce product wastage .
Value of online F&G retail ²⁶ (in USD billion)	2.1	8.7 ²⁷	
Value of the dairy industry ²⁸ (in USD billion)	110	259	
Investment potential of the food processing industry ²⁹ (in USD billion)	-	33 ³⁰	
Potential value of the pharma industry ³¹ (in USD billion)	-	80 - 90 ³²	



KEY MARKET DRIVERS	2018	2023	IMPACT
CS Capacity ³³ (in million tonnes)	37-39	70-75	CS capacity, value and stock in India likely to double over 2019-23. Government initiatives to reduce post-harvest waste, encourage investment and improve logistics efficiencies, coupled with the growth of the OFD industry expected to boost the overall CS capacity, value and RE stock.
CS RE Stock ³⁴ (in million sq. ft.)	750 – 800	1,400 – 1,500	
Value of CS segment ³⁵ (in USD billion)	3.6 ³⁶	6.8 ³⁷	

The above-mentioned drivers are expected to fuel the growth of the CS segment over the next few years. For instance, local grocery / kirana stores are becoming smarter and developing ways to deliver food / grocery, thus expanding the market for OFD services and consequently CS (refrigerated) facilities. In this age of digitisation and improved internet access, we expect the demand for OFD services in both rural and urban cities to grow.

Thus, we anticipate that the CS segment is likely to be concentrated in major urban metros in either **a few strategic in-city locations** or in peripheral areas in proximity to rural markets. Considering the vast untapped potential of the CS segment in the country, we expect that the **unique consumer / industry-led factors in India** would continue to attract the interest of leading players at large in the coming years.

CONTACTS:

RESEARCH

Abhinav Joshi

Head of Research, India
abhinav.joshi@cbre.co.in

Sachi Goel

Senior General Manager
sachi.goel@cbre.co.in

Raaj Thilak Raveendran

Deputy General Manager
raajthilak.raveendran@cbre.co.in

Karthiga Ravindran

Assistant Manager
karthiga.ravindran@cbre.com

BUSINESS LINE

Ram Chandnani

Managing Director, Advisory & Transactions Services
ram.chandnani@cbre.co.in

Jasmine Singh

Senior Executive Director – A&T Services, India
jasmine.singh@cbre.co.in

GLOBAL RESEARCH

Richard Barkham, Ph.D., MRICS

Global Chief Economist & Head of Research
richard.barkham@cbre.com

Neil Blake, Ph.D.

Head of Forecasting & Analytics, Global
neil.blake@cbre.com.

Henry Chin, Ph.D.

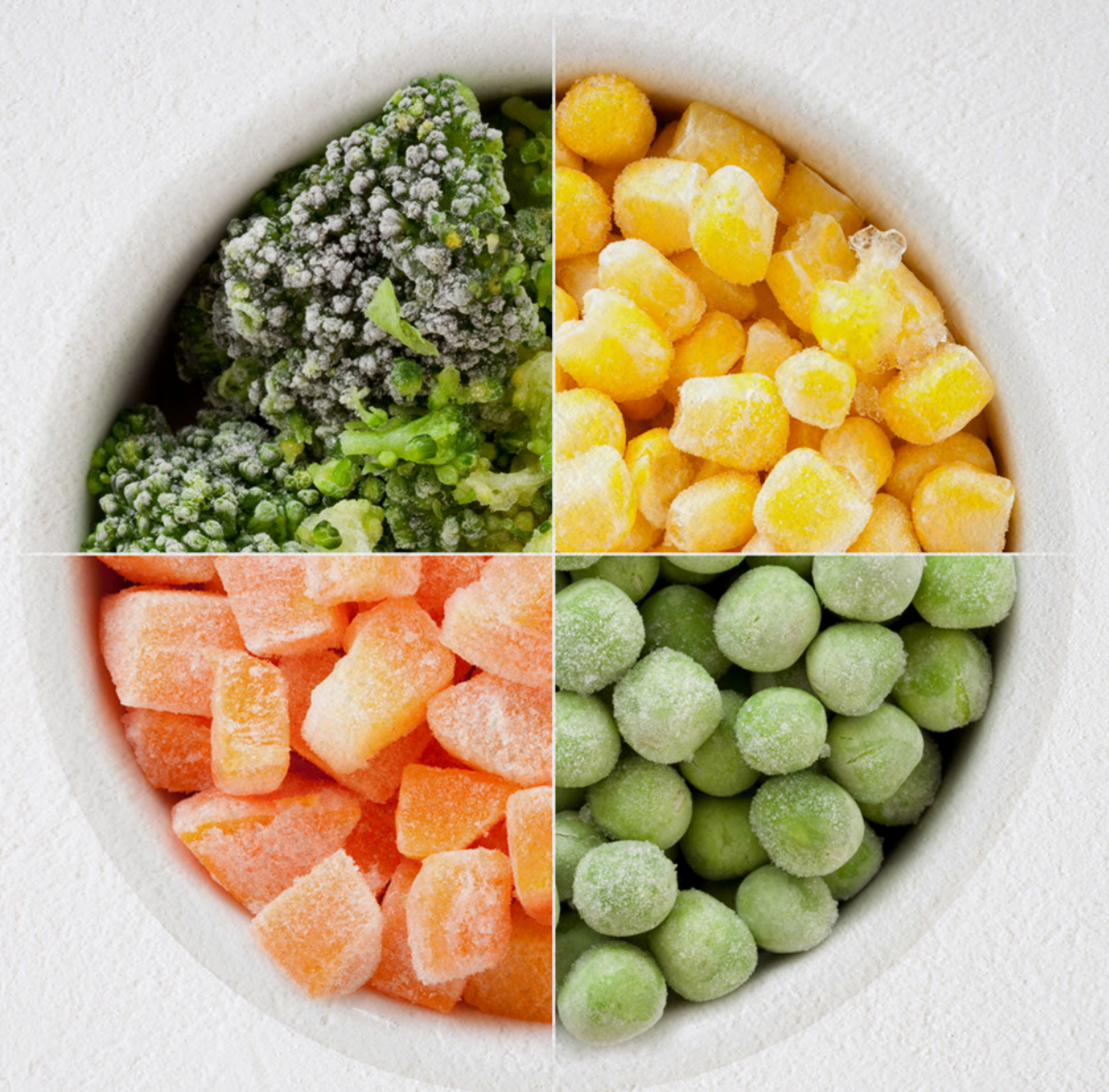
Global Head of Investor Thought Leadership and Head of Research, APAC
henry.chin@cbre.com.hk

Spencer Levy

Chairman & Senior Economic Advisor,
Americas Research
spencer.levy@cbre.com

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