

Insights

Logistics is a key growth market

Across Asia Pacific, demand for logistics space has been supported by a long-run shift from physical to online retailing. COVID-19 has driven up e-commerce volumes sharply, while expansion in the cold chain sector and new infrastructure developments should boost demand further. Most investors and developers already see logistics warehouses as a core asset class.

Logistics markets across APAC vary by stock, specifications and outlook

Relative to their populations, Australian cities are the best served by logistics facilities, with

2.2-3.1 sq metres

of Grade A warehouse space per capita.

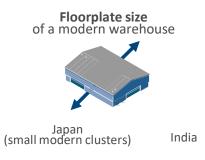
In Japan, old stock makes up over 90% of the total. Greater Tokyo and greater Osaka have only

0.4 and 0.2 sq metres

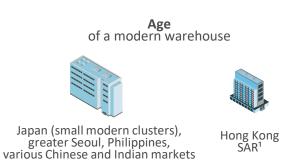
of total warehouse space per capita.



5 vs 1



up to 100,000 vs <13,000 sq metres



2-4 vs >10 years

Cold chain is a major new growth driver

Logistics clusters with high stock of cold chain warehouses include:

Singapore 10% of total stock

West China (Chengdu) 15% of total stock

Australia 3-5% of total stock

Recommendations

We expect demand from occupiers for logistics space, and from investors and developers for logistics assets, to stay firm across Asia Pacific over the next five years.

However, given wide variations by market, participants in APAC logistics markets require different approaches:

- With firm demand and limited supply in China's Tier 1 cities, tenants and owners may have to seek space and opportunities in locations away from the main centres.
- > Japan stands out as an underserved market.
 Given low availability of modern units, investors and developers may apply value-add strategies to older stock. It is increasingly common to demolish and rebuild.
- > Looking ahead, we expect that big purpose-built cold chain warehouses will be built near ports and transport hubs, while renovated cold chain warehouses will be located nearer cities for easy distribution. Occupiers and owners will find opportunities in both types.
- > Australia has ample logistics stock, but it is tightly held and vacancy rates are well below their long-run averages. Investors should be willing to buy a portfolio of assets to achieve scale.

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¹ Special Administrative Region [of the People's Republic of China]

Best served by modern logistics stock: Australia Most underserved by modern logistics stock: Japan















Note. All figures in this report are presented in square metres, and adjusted where necessary from NFA to GFA. Source: Colliers International

Singapore and Japan's small modern clusters: warehouses new and large Australia and India: warehouses: smaller, typically one storey



Japan

Nagareyama/Kashiwa (greater Tokyo) and Ibaraki City (greater Osaka) clusters

70,000-100,000 sq metres





Singapore

<11,000-100,000 sq metres (avg 31,000 sq metres)



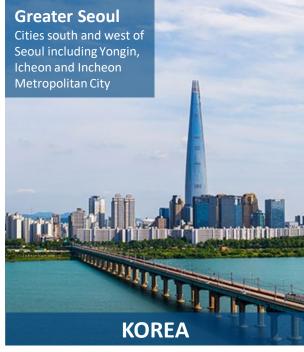




Established and emerging logistics markets in APAC

In some Asia Pacific countries, logistics markets are closely associated with the major cities. This is the case in Australia where the major East Coast cities make up about 85% of demand and there are no new warehouse clusters. In other countries, logistics facilities have spilled over from large cities into surrounding areas, and new logistics clusters covering several cities are emerging; this is the case in China especially. There are also concentrations of warehouses associated with specific cities or sites, such as the Nagareyama/Kashiwa cluster near Tokyo and the Auckland Airport cluster in New Zealand. The chart below highlights established and emerging logistics markets across the region.





Territory wide

HONG KONG SAR











CALABA



Key statistics (major logistics markets, Grade A only)

This report asks which logistics markets offer the best long-run development opportunities, which are best-positioned in terms of specifications and location, and which should benefit the most from growth in cold storage. It also asks which markets offer investors the highest rent growth and yield. We summarise key statistics for the most important logistics markets below.

| Market | Total stock, GFA (mn sq metres) | Stock/ capita | Rent / sq metre / month (USD) | Vacancy rate (%) | Supply (2020) as % of stock | Avg no. of storeys per warehouse | Avg floorplate (sq metres, GFA) | Avg age (years) | Yield (%) | 5-yr CAGR in rent (%) |
|----------------------------|------------------------------------|------------------|----------------------------------|---------------------|--------------------------------|----------------------------------|------------------------------------|--------------------|-------------------|--------------------------|
| Hong Kong SAR | 0.58 | 0.08 | 18.6 | 6.2% | 5% | 15 | 21,300 | >10 | 3.5% | 0.7% |
| Singapore | 4.56 | 0.80 | 8.0 | 11.7% | 7% | 5 | 31,100 | 5.0 | 5.5% | 0.8% |
| Nagareyama/Kashiwa (Tokyo) | 1.32 | 0.04 | 10.8 | 5.0% | 9% | 4 | 100,000 | 5.0 | 4.0% | 1.3% |
| Ibaraki City (Osaka) | 0.11 | 0.01 | 11.3 | 5.0% | 53% | 4-5 | 70,000 | 5.0 | 4.1% | n/a |
| North China | 7.49 >5.0 | 0.20 | 5.5 | 10.6% | 7% | 1-2 | 19,500 | 1-10 | 5.2% ¹ | 4.5% ¹ |
| East China | 12.51 >10.0 | 0.40 | 5.8 | 13.5% | 11% | 1-2 | 15,000 | 5.0 | 5.2% ² | 2.7% ² |
| Greater Shenzhen | 5.30 >5.0 | 0.18 | 5.9 | 3.4% | 18% | 1-6 | 15,000 | 4.1 | 5.3% ³ | 3.8%³ |
| Greater Guangzhou | 4.04 | 0.15 | 4.9 | 11.9% | 24% | 2 | 24,000 | 5.0 | 5.3%4 | 2.0%4 |
| West China | 10.19 >10.0 | 0.18 | 3.6 | 20.9% | 16% | 1-2 | 17,500 | 3.6 | 5.4%5 | -0.9%5 |
| CALABA (Philippines) | 0.91 | 0.10 | 3.8 | 5.5% | 9% | 1 | n/a | 3-5 | 6.5% | 7.5% |
| Greater Seoul | 6.82 >5.0 | 0.27 | 7.8 | 8.0% | 26%* | 3-4 | 15,000 | 3 | 5.3% | 3.0% |
| Sydney | 12.85 >10.0 | 2.52 | 6.7 | 4.5% | 4% | 1 | 17,000 | 1-10 | 4.7% | 2.4% |
| Melbourne | 14.04 >10.0 | 3.05 | 4.5 | 3.0% | 5% | 1 | 17,000 | 1-10 | 5.2% | 2.0% |
| Auckland Airport | 0.37 | 0.23 | 6.7 | n/a | 23% | 1 | 5,400 | n/a | 5.3% | 1.8% |
| Mumbai | 12.44 >10.0 | 0.97 | 2.6 | 10.7% | 1% | 1 | 8,300 | 6.0 | 9.3% | n/a |
| Bengaluru | 2.56 | 0.30 | 2.6 | 29.7% | 3% | 1 | 5,200 | 5.0 | 8.5% | n/a |

^{*} Versus most recent total, and assuming all planned development goes ahead. ¹ For Beijing only. ² For Shanghai only. ³ For Shenzhen only. ⁴ For Guangzhou only. ⁵ For Chengdu only.

Source: Colliers International

Note. All figures in this report are presented in square

Source: Colliers International

metres, and adjusted where necessary from NFA to GFA.

Melbourne

14.04

Grade A stock (millions of sq metres, GFA) and stock/capita by market

Legend





Well served by quality logistics stock

- > Melbourne, Sydney, Brisbane
- > Mumbai, Singapore

Poorly served by quality logistics stock

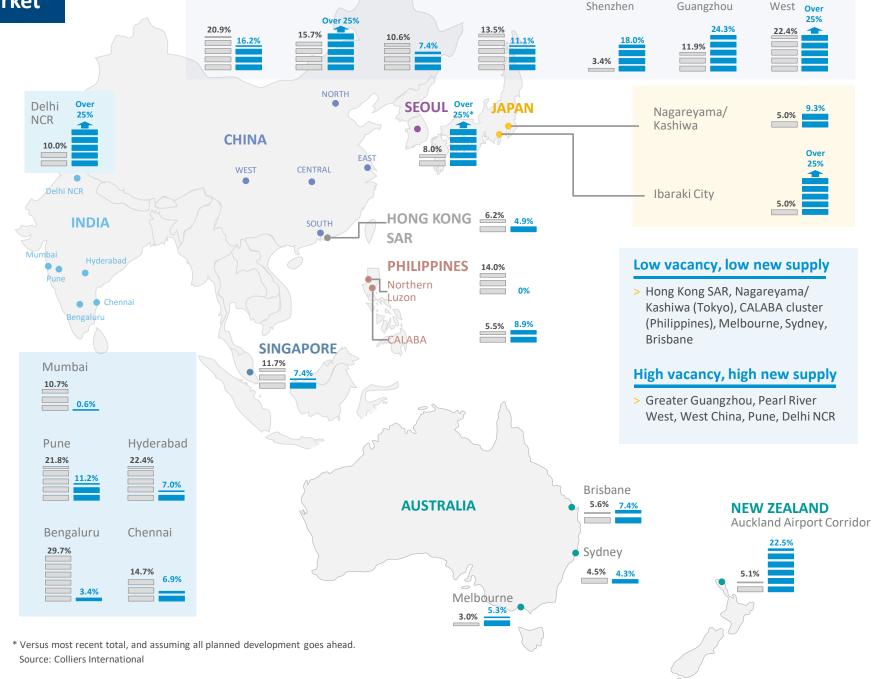
- > Greater Tokyo, Greater Osaka
- > Central China, Philippines, Hong Kong SAR
- East China and Australia have the largest bases of modern logistics stock in APAC. The four-city East China cluster has 12.5mn sq metres of Grade A stock, while the Sydney and Melbourne large city markets have 12.9mn and 14.0mn sq metres respectively. Mumbai comes just behind on 12.4 million sq metres.
- East Coast Australian cities are exceptionally well served by the logistics sector, with 2.15-3.05 sq metres of Grade A warehouse space per capita.
- Best served in Asia are Mumbai and Singapore, with 0.97 and 0.80 sq metres of Grade A space per capita respectively.
- Greater Tokyo has over 13.0 million sq metres of warehouse space, but modern Grade A stock makes up only about 10% of the total. This is concentrated in the Nagareyama/ Kashiwa cluster in Chiba Prefecture (1.32 million sq metres).
- Grade A space of 110,000 sq metres in the Ibaraki City cluster near Osaka makes up only about 3% of stock in that region.
- Greater Tokyo and greater Osaka have only 0.01-0.04 sq metres of Grade A logistics stock per capita, or 0.19-0.39 sq metres of total logistics stock per capita. This is still very low.

Vacancy rate and new supply by market

Legend



- New supply in 2020 as proportion of existing stock (%)
- Vacancy in the small Japanese modern clusters is low, and new supply is limited in the Nagareyama/Kashiwa cluster in greater Tokyo. In Japan, investors may apply value-add strategies to older stock. It is increasingly common to demolish and rebuild.
- Singapore is one of the best-served Asian logistics markets, with Grade A stock on a GFA basis nearly 8x that of Hong Kong SAR. This helps explain the vacancy rate of 11.7% and modest average annual five-year rent growth of 0.8%.
- In South China, Greater Shenzhen has lower vacancy (3.4%) than the Greater Guangzhou or Pearl River West clusters.
 While 2020 new supply is high in all three, it is lowest in Greater Shenzhen at 18% of existing stock. This drives higher average annual rent growth over five years for Greater Shenzhen, at 3.8% versus 2.0% for Greater Guangzhou.
- West China has both high vacancy (20.9%) and ample new supply in 2020 (16.0% of existing stock). This helps explain our forecast of **negative rent growth** for the next two years.
- If all assets planned for future development are supplied, total GFA of Grade A logistics centres in Greater Seoul will reach 8.6 million sq metres by end-2020, up by 26% from the current level.
- In india, Mumbai and Delhi NCR have vacancy rates of 10-11%, but the other clusters have **vacancy of 15-30%**. New supply in 2020 is modest in all markets except Delhi NCR.
- Despite being very well-served in terms of total stock,
 Australian logistics markets have vacancy rates well below
 long-run averages, in a range of 3-6%. Planned new supply in
 2020 is also modest, in a range of 4-7% of existing stock. This
 should underpin rental growth over time.



NORTH CHINA

CENTRAL CHINA

WEST CHINA

EAST CHINA

SOUTH CHINA

Greater

Pearl River

Greater

Location strengths and weaknesses of logistics concentrations



Closest to their main urban markets (15-20 km or less on average)

furthest from their main urban markets (60-75 km or more on average)





India

In the Hyderabad cluster, the Outer Ring Road provides robust connectivity to state and national highways. The logistics hubs of the Bengaluru cluster are also located along major state or national highways, and connected at the edge of the cluster by an Outer Ring Road. The upcoming Peripheral Ring Road will further improve the regional connectivity of these hubs.



Singapore

The Tuas Mega Port is the biggest port infrastructure project in the world and will overtake Shanghai as the busiest port in operation once completed.







ACCESSIBILITY

- Besides the city markets of Hong Kong SAR and Singapore, the logistics concentrations closest to the main urban markets that they serve are Brisbane (15 km), Ibaraki City (15 km from central Osaka), Chengdu (two-thirds of stock is under 15 km from the city centre), and Hyderabad (about 20 km).
- The logistics concentrations furthest from their main urban markets are Northern Luzon (74 km from Quezon City, the nearest business district of Metro Manila), Pearl River West (Zhuhai, Zhongshan and Jiangmen are 60-100 km from central Shenzhen and Guangzhou), and East China (with some of the logistics sites up to 60 km from central Shanghai).





AUD130 billion (USD94 billion) of transport projects are underway or committed in Australia

Australia - Melbourne

Congestion is becoming an issue in inner ring industrial markets, so new development has been concentrated in the West and North submarkets along major infrastructure projects. Overall, land is more readily available and as a result supply levels are greater than Sydney for 2020.

New Zealand - Auckland Airport cluster

Motorway connections have been improved over recent years primarily through construction of the Waterview Tunnel. Local roadworks are currently underway. A second runway is to be constructed with completion expected by end-2028.

Australia - Sydney

Chengdu

Hyderabad

Road access is good throughout the city, and infrastructure projects underway should improve access even more. However, land is very limited, with just 313 ha of land available for short-term development.

North China

East China

Philippines

South China clusters

Northern Luzon









The Beijing-Tianjin-Langfang region has an especially dense transportation and logistics network.

East China

The GDP of the Yangtze Delta accounts for 24% of national GDP. Two of the three online retail giants in China are based in the region.

South China

The Shenzhen to Zhongshan bridge should drive growth in the greater Shenzhen cluster, while the expanding Nansha Port should strengthen the greater Guangzhou cluster.

West China

Ibaraki City

Over time, the rising cargo-carrying capacity of Europe-bound trains from Chengdu's Qingbaijiang International, Chongqing's Shapingbai and Xi'an's Bagiao International Railway Ports should generate greater demand for logistics space.



Brisbane

Sydney

Melbourne

Philippines

The CALAX and SLEX expressway projects will strengthen the CALABA cluster, while the modernization of Clark Airport will support the Northern Luzon cluster.

Well located

> Brisbane, Ibaraki City (Osaka), Chengdu, Hyderabad

More remote

> Northern Luzon, East China, Pearl River West (South China)

Best-placed to benefit from infrastructure projects

Near term: Singapore, greater Shenzhen and greater Guangzhou, Hyderabad, Bengaluru, Philippines clusters, Sydney and Melbourne, Auckland Airport. Medium term: West China

Auckland



LOGISTICS | ASIA PACIFIC | 15 OCTOBER 2020 **COLLIERS RADAR**

Average Grade A specifications by market (1)

Legend Floorplate size ('000 sq metres, GFA) 2-5 floors **Average number of floors**

Age of building (years, approx. average)

Largest and tallest

> Hong Kong, Singapore, Nagareyama/Kashiwa and Ibaraki City clusters

Smallest and lowest

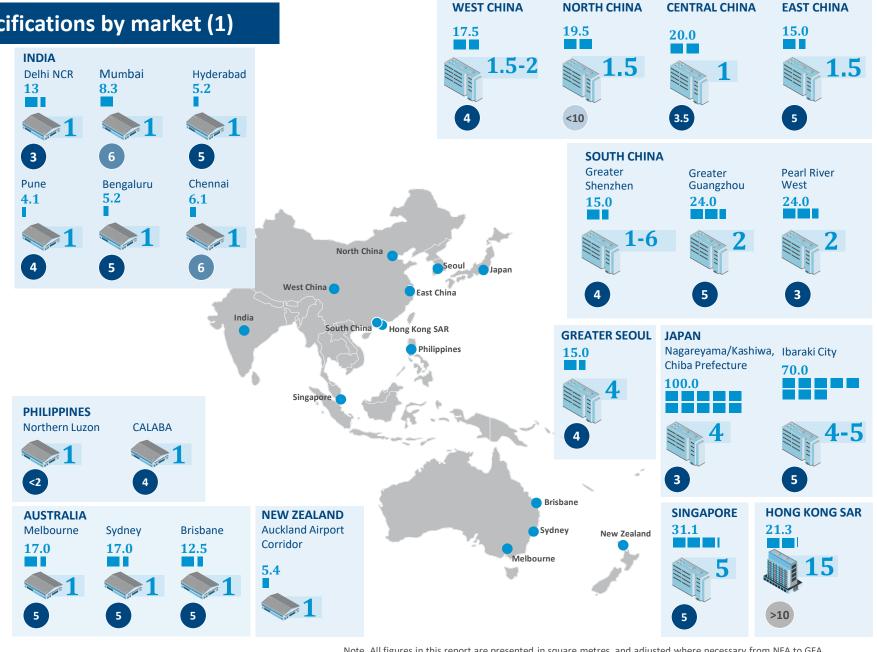
> India (all markets), Philippines, Australia, Auckland Airport

Newest

> Northern Luzon, Pearl River West, greater Seoul, Nagareyama/Kashiwa, Central China, West China, Delhi NCR, Pune

Oldest

> Hong Kong SAR



Note. All figures in this report are presented in square metres, and adjusted where necessary from NFA to GFA. Source: Colliers International

- Hong Kong SAR has some of APAC's highest (15 storeys on average) industrial buildings. They are also the oldest: mostly well over 10 years.
- Apart from this special case, markets where warehouses are going vertical include Singapore (5 storeys), Japan's modern clusters (4-5), and Seoul (3-4).
- · Markets where most warehouses have just one storey include India, West China, Australia and New Zealand.
- Japan's Nagareyama/Kashiwa cluster has the largest average Grade A warehouse size at 100.000 sq metres. followed by Ibaraki City on 70,000 sq metres.
- Next biggest is Singapore, where warehouse sizes (on a net lettable area basis) range from 10.000 to 90.000 sa metres. Recent transactions suggest an average of 28,000 sq metres, or 31,100 sq metres on a GFA basis by our estimate.
- India has the smallest average warehouse size (4,100-13,000 sq metres on a GFA basis).
- The newest large Grade A warehouse clusters in APAC (with ages of three to four years) are greater Seoul and greater Tokyo's Nagareyama/ Kashiwa district. However, about 90% of logistics stock in greater Tokyo is significantly older and below modern standards.

Specifications of best modern warehouses

> Multi-storey

COLLIERS RADAR

- Equipped with docks, dock levellers and parking
- > Can handle 10-12 metre trucks
- Environmentally friendly, incorporating green technology
- Socially friendly, with amenities for employees

How many storeys can a warehouse have?

The number of storeys depends partly on:

- > Land price and available space
- Ability of truck drivers (more capable drivers are used to ramps)
- Degree of automation of the warehouse (which allows the human factor to be eliminated)

North China:

Most future supply will be

Multi-floor (2-3 storeys)

West China:

Most future supply will be

Multi-floor (2-3 storeys)

due to the government's requirements for intensive land use. However, hardware standards of Grade A warehouses have not been upgraded significantly in the last ten years.



East China:
Ramp-up facilities can handle
10 metre trucks.

Japan: Socially friendly

The buildings in the Nagareyama/Kashiwa and Ibaraki City clusters are complete with a lounge or nursery, and a full range of amenities for employees.

Australia:

Highest floor heights

Average floor—to-ceiling heights in Australia are the highest in APAC on 11-14 metres.



India:

- Mumbai and Pune clusters:
- A standard facility consists of fire hydrants, docks, dock levellers, office blocks and parking space. Cranes, fire sprinklers and other tenant improvements are provided at an additional cost.
- Hyderabad, Bengaluru and Chennai clusters: Most of the Grade A facilities come fitted with sprinklers, hydrants, dock levellers and ample truck parking areas. Availablilty of Grade A facilities is low, but many organised warehouse operators are keen to

initiate projects to build Grade A facilities.

Hong Kong:



4.5 metres is the maximum height for large vehicle access

Singapore: Ramp-up facilities should handle **20-footer to 40-footer trucks**.

Philippines:

Parking for 40-footer trucks

Units typically have elevated floors with dock levellers and parking for 40-footer (12 metre) trucks.

New Zealand:

Environmentally friendly

Modern buildings are increasingly targeting green star ratings, incorporating technology like solar panels.



Grade A rents by market

Legend



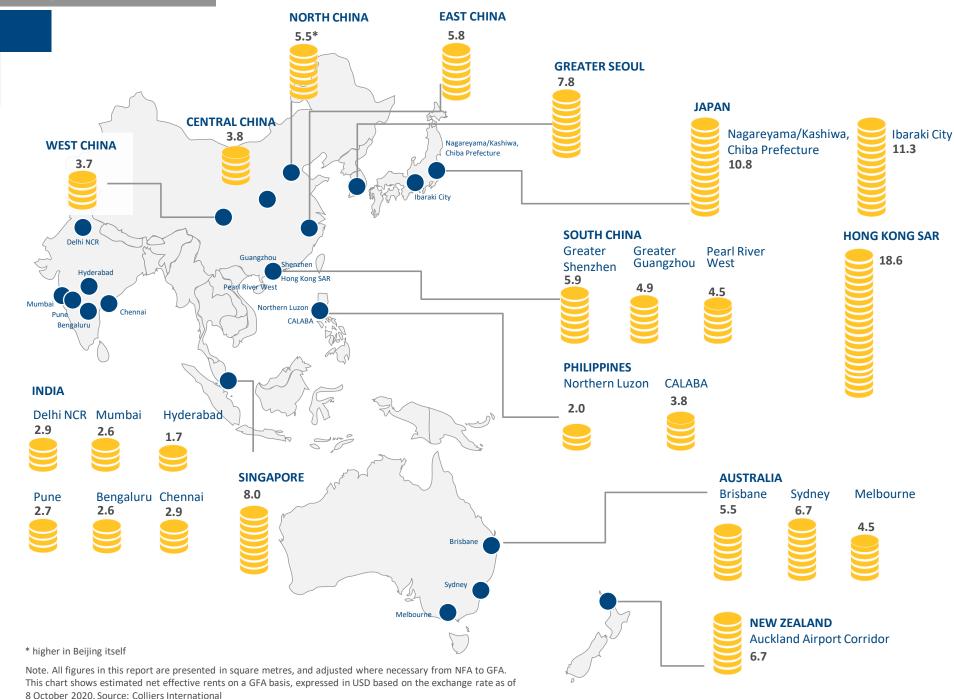
Net effective rent (USD) per sq metre per month on a GFA basis

Highest rents

> Hong Kong SAR, Japan's small modern clusters, some of the South Korean cities, Singapore

Lowest rents

- > West China (though cities with non-Grade A logistics markets are lower), CALABA cluster (Philippines), Indian clusters (especially Hyderabad)
- Hong Kong SAR is again a special case, with APAC's highest logistics rents (USD18.6 per square metre per month) in some of its oldest buildings.
- Logistics rents elsewhere in APAC vary widely. At the high end, in a range of USD8.0-11.3, are Japan's small modern clusters, some of the South Korean cities, and Singapore.
- Unsurprisingly, rents appear to be highest in markets with limited supply of quality stock and high specifications.
- At the low end, in a range of **USD1.7-3.8**, lie the clusters in the Philippines and India (with Hyderabad the cheapest of all).
- Face rents in greater Seoul range between USD6.0 and USD11.8. We estimate a weighted average net effective rent of USD7.8.
- Weighted average rents for the major Chinese logistics markets lie in a range of USD3.6 to USD5.8. Some cities have lower rents, but they lack a Grade A market.
- Logistics rents in Australia are highest in Sydney (USD6.7), and cheapest in Melbourne (USD4.5).



Cold chain drives new growth (1)

North China:

There are very few cold chain warehouses in the Beijing cluster. Most logistics companies **rent standard warehouses and renovate them** for the cold chain business.

West China:

Chengdu stands on the threshold of a new wave of cold storage supply. Future demand will come from food manufacturers, supermarket and catering chains.

East China:

As in North China, there is limited supply of cold chain warehouses. **Tenants therefore usually need to renovate other warehouses.**Furthermore, environmental policy in Shanghai **limits the use of freon** (i.e refrigerant and aerosol propellants), raising the total cost of cold chain. Many tenants therefore look to **lease space in surrounding cities**.

Korea:

Pure cold storage in greater Seoul is limited due to high construction costs and higher technical requirements than for dry properties. More recently, high supply of large-scale logistics complexes and the growth of the fresh food delivery market has led to an increase in transactions of mixed assets that combine dry and cold facilities.

Singapore:

Cold chain makes up

10% of total Grade A warehouse space by our estimate, i.e. about 457,000 sq metres on a GFA basis. Cold storage rents can be

100-200% higher than dry warehouse rents.

Japan:



Cold chain for food and pharmaceuticals are key drivers of growth in the logistics business at present.

Much rebuilding is taking place in the sector, due to the deterioration of buildings originally constructed in the 1980s.

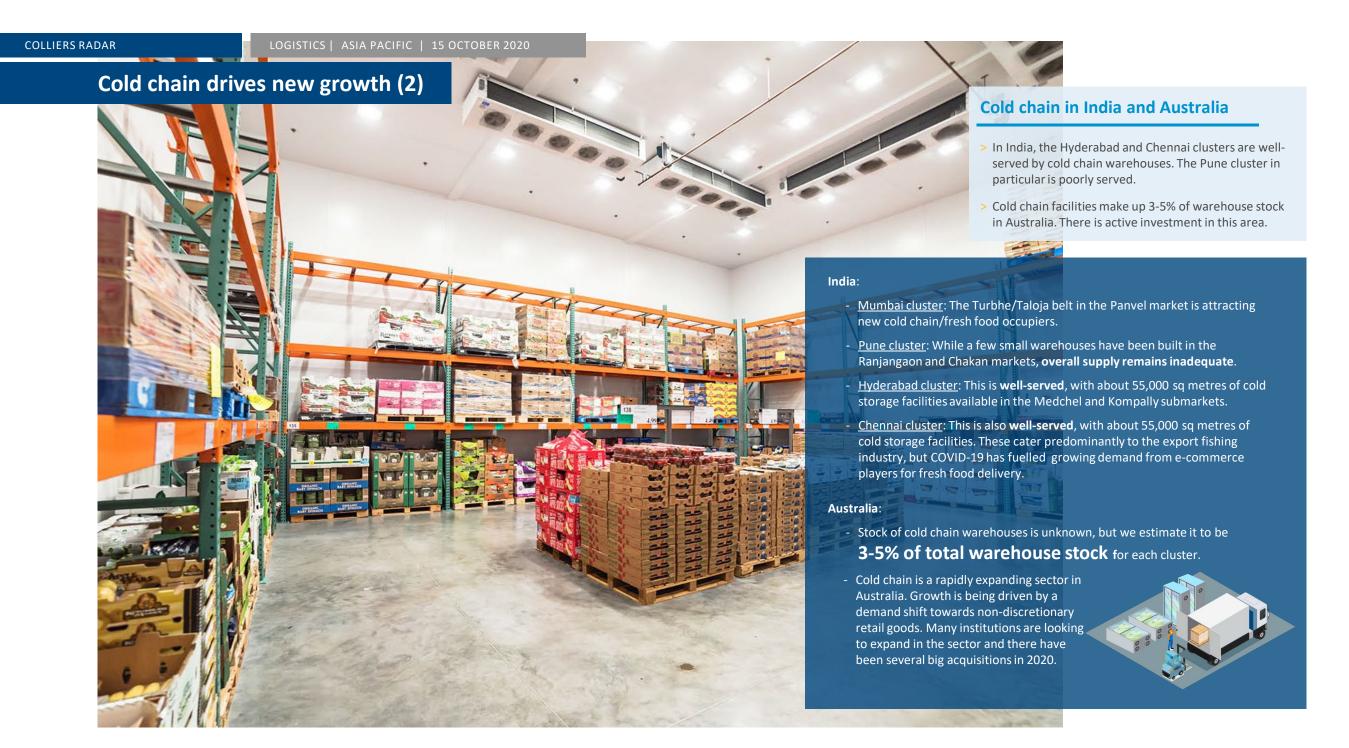
Major driver of growth in the sector

- Delivery volumes of fresh food ordered online are rising 100-200% YOY in certain markets.
- > Besides fresh food, the pharmaceuticals sector requires cold chain facilities for product distribution.
- > In certain markets, e.g. Singapore, cold storage rents can be 100-200% higher than dry warehouse rents.

How to invest in cold chain

Looking forward, we expect that high-volume purpose-built cold chain warehouses will be built near ports and transport hubs, while renovated cold chain warehouses will be located closer to cities for easier distribution. Purpose-built warehouses cannot be too small, or construction will not make economic sense. Conversely, renovated warehouses can be as small as 6,000 sq metres.

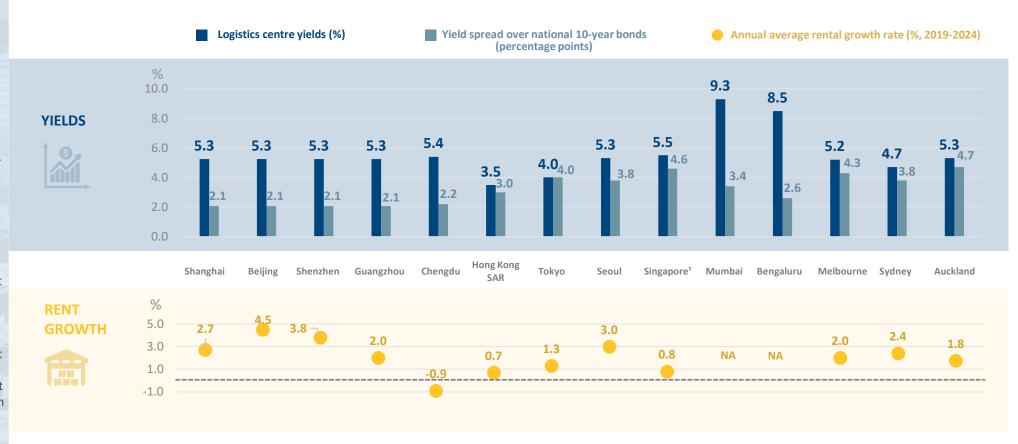




APAC logistics/industrial city markets: yields, yield spreads, rent growth

Good value, solid growth, low risk

- Logistics yields range between over 8.0% for Indian city markets at the high end, and 3.5% for Hong Kong SAR at the low end. However, most yields lie in a range of 4.0%-5.5%.
- Spreads over national ten-year bond yields range between 4.6%-4.7% for Singapore and Auckland at the high end, and 2.1%-2.2% for Chinese city markets at the low end.
- Average annual rent growth over five years is highest in Beijing, Shenzhen, greater Seoul and East China, but above 1.0% p.a. in all markets except Singapore, Hong Kong SAR and West China.
- > In Chengdu, we see negative rent growth in 2020 and 2021 due to high new supply. From 2022, rent growth should pick up due to firm demand. Xi'an and Chongqing should show five-year average rent growth of 0.4%-0.5% p.a.
- > The range of cap rates across Indian markets for warehouse assets is 8%-10%. This has been marginally higher than the range of yields on office assets.



¹ Note. Logistics facilities in Singapore typically have short land tenure. This fact tends to push up yields. For example, a recent transaction on Bulim Street was done on a yield of 7.07% (before transaction costs), with 22 years left of the land lease left. See https://www.businesstimes.com.sg/companies-markets/aims-apac-reit-proposes-to-buy-bulim-street-logistics-facility-for-s1296m
Sources: Colliers International, Bloomberg, other.

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