



Accelerating success.



October 2015 | Global | Industrial & Logistics

FROM FIRST MILE TO LAST MILE

GLOBAL INDUSTRIAL & LOGISTICS TRENDS

Easily navigate through the document by clicking on the chapter boxes.

Introduction

Someone once said the world was flat. Although we know this not to be true, global trends are increasingly impacting the transportation, logistics, retail and capital markets. This is serving to flatten out the global industrial and logistics warehouse real estate market, but we're happy to report that significant differences remain, and will continue to ensure this does not become a homogeneous landscape.

In this global report we focus on a number of key markets across the three main global regions to examine the potential impact of forecast population and consumption growth, technological advancement, trade flows and new infrastructure on key logistics clusters. Within each region we focus on key trade and consumption clusters to compare and contrast how different markets operate in terms of managing the distribution of goods, the challenges and opportunities they face, and the solutions being implemented to improve supply chain efficiencies from first mile to last mile.

In particular, we focus on the vast growth potential of e-retail driven logistics and warehousing, reviewing cutting-edge examples of modern warehousing and distribution space to understand how solutions have been created to manage what appear to be increasingly common problems.

Case studies of traditional and e-retail specific retailers have been prepared (some need to remain anonymous) to examine the set-up of first mile to last mile logistics, warehouse distribution and supply chain management. This has provided us with an insight into how much distribution space is being used to support the various retail business operations, and how this network of space is being modified to achieve greater customer service, particularly with the advent of same day delivery.

The Driving Force of E-Retailing

This analysis of existing retailers provides us with a very useful proxy for future warehouse demand requirements, using current examples of annual revenue/distribution space (sq ft). As populations change, consumption behavior becomes increasingly technology driven – supported by improving technological infrastructure – and logistics operations are optimized to meet customer requirements, there is vast potential for growth in modern logistics space.

This will comprise new space at the initial 'First Mile' level, supported by mega Distribution Centers (DCs), along the supply chain spectrum to the 'Last Mile'. It is at this level where a proliferation of E-Fulfillment DCs on the edge of urban areas, smaller urban facilities within urban community catchment areas and a variety of 'click and collect' options are coming to the fore. The majority of which have been established to support swift response times, especially with the advent of same day delivery.

This also points to some interesting trends we're seeing in terms of the pricing of modern logistics facilities relative to retail space, and how we expect this to change, in a wider urban planning context. We hope you enjoy the report.

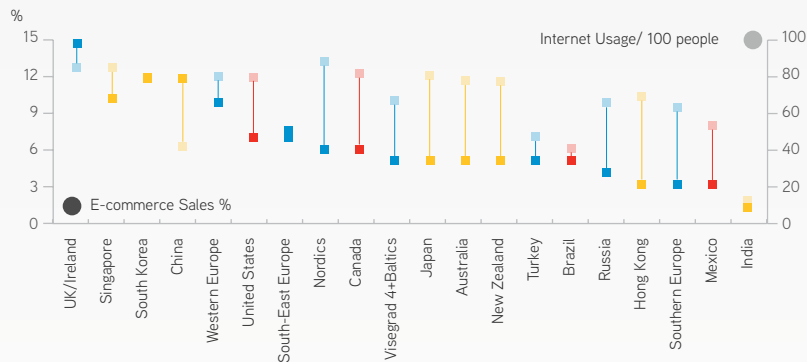
Table of Contents

- **3 Digital Trends:** Provides an overview of innovative urban logistics solutions in response to e-retailing growth and consumer demand expectations position of each country in terms of the advancement of e-retailing and the adoption of new technologies, providing the platform for e-retailing to proliferate.
- **4 Population & Consumption Trends:** Examines the outline scope for growth and change, by country, in terms of the demand for retail products.
- **6 Global Trade Flows:** Looks at how individual clusters have become established destinations, facilitating the flow of goods to major markets, and how this is impacting the internal supply chain.
- **7 Key Clusters & Physical Infrastructure:** Reviews examples of new infrastructure in key clusters, which is either planned or ongoing, and likely to significantly enhance or alter logistics frameworks and warehouse real estate markets for many years to come, allowing them to grow and expand.
- **16 First Mile:** Looks at examples of cutting-edge DCs across the globe, and how they have been established to facilitate changes in retail, and e-retailing demand.
- **18 Last Mile:** Provides an overview of innovative urban logistics solutions in response to e-retailing growth and consumer demand expectations.
- **22 Case Studies:** Examines a range of retailers, reviewing their business and distribution models. There is an additional section of E-retailing growth in Sub-Saharan Africa.
- **29 Market Implications, Opportunities and Positioning:** Provides a summary of the market implications and opportunities in the logistics sector, created by an increase in demand growth from the retail sector.



Digital Trends

Fig. 1: E-commerce Sales vs Internet Usage



Source: Colliers International, World Bank, Various Sources

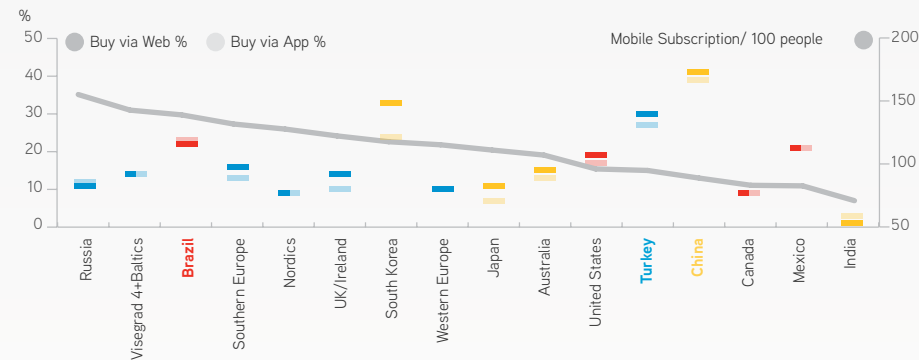
It is of limited surprise that global Transportation & Logistics CEOs have put 'adopting digital technologies to create value (often in new ways)' at the top of their to-do list, according to the latest Annual Global CEO Survey conducted by PWC.

In particular: Some 81% of CEOs see mobile technologies for customer engagement as most strategically important for their organization – more than any other digital tool. But companies that want to exploit the power of mobile technologies to engage customers face tough choices about how, and how fast, to move to mobile channels and how to integrate those with more traditional channels.

A further 80% see data analytics as having strategic importance. The ability to access, analyze and circulate information about their customers, and use that information to create the type of relationships that their customers want is cited as the most important use of the data. But companies that can most effectively use analytics to inform demand-side decisions about business processes and consumer needs – and be pro-active – will outperform those that can't.

A further 56% foresee a shift in consumer spending and customer behavior taking a significant toll on their business. This is understandable.

Fig. 2: Mobile Use In-store vs Mobile Subscriptions



Source: Colliers International, World Bank, GfK

As Figure 1 illustrates, there is a very strong 'historical' correlation between internet usage and e-retailing sales as a % of all retail sales by country. But a few countries buck the trend – namely China, Brazil and Turkey – countries which have evolved quickly on the global e-retailing scene. In these markets, mobile use has been adopted at a much faster rate, impacting consumer behavior. As Figure 2 shows, these countries (along with many others) have a much higher rate of mobile use per person than 'old-fashioned' internet usage from a PC or laptop. More importantly, mobiles/smartphones are increasingly in use in-store to make a transaction – either through a dedicated app or website.

This represents a significant, step-change in activity which will expand rapidly. The number of mobile phone users globally was expected to total 4.55 billion in 2014 – nearly 70% of the world's population – with smartphone users totaling 1.75 billion.

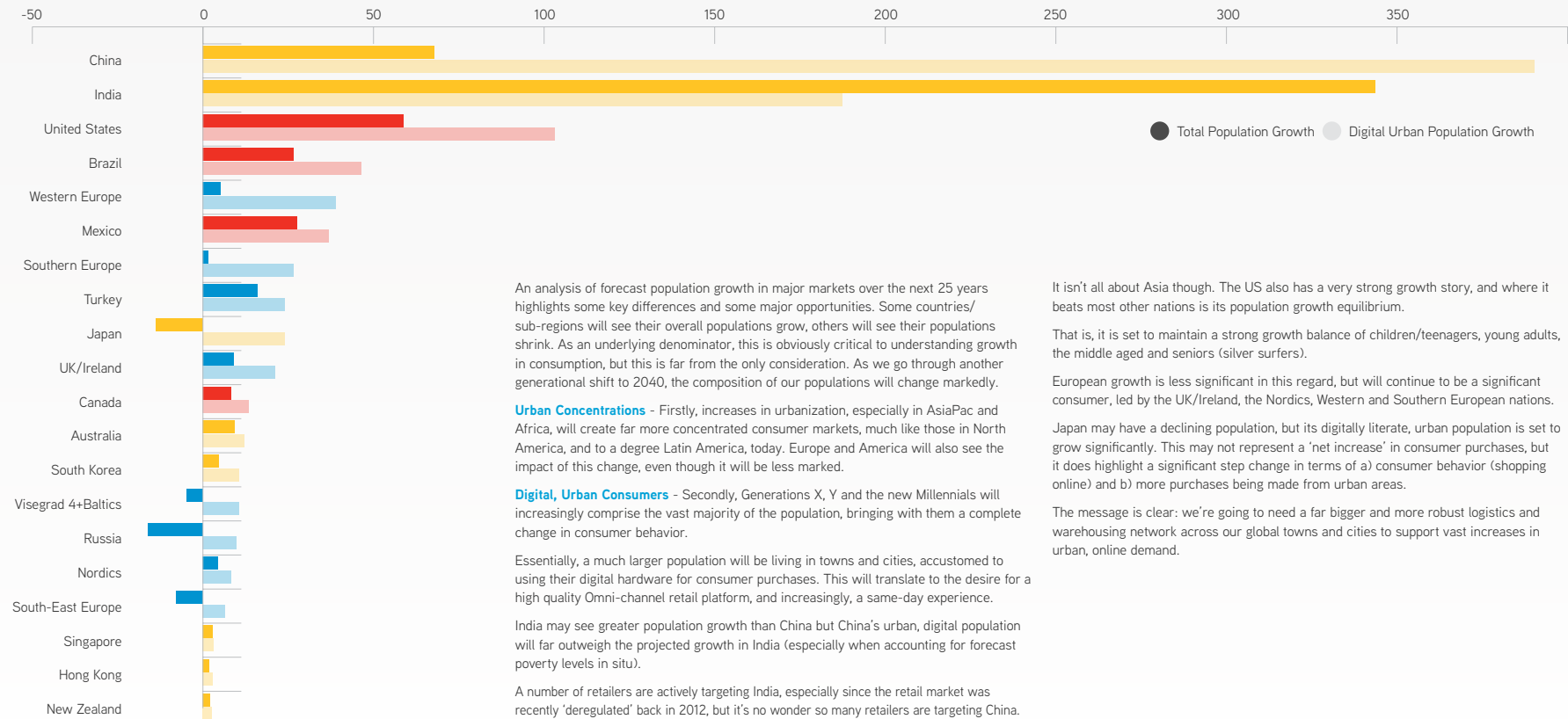
The volume of mobile traffic generated by smartphones is now about twice that of PCs, tablets and routers – despite having only surpassed them in 2013 – and is predicted to grow ten-fold by 2019.

Markets such as Brazil are investing heavily in digital infrastructure to go from 2G to 4G, and mature markets, (for example Australia, which is expanding its US\$30 billion (AUD41 billion) nationwide broadband network by the end of 2016), will drive a big shift in internet usage over the next 18 months. This will continue to improve the ease with which online retailing can be conducted anytime, anywhere.

This pattern will accelerate further as Generation X and the Millennials increasingly form a larger proportion of each country's population, driving the size of the consumer pool which is 'technologically savvy'.

Population & Consumption Trends

Fig. 3: Total Population vs Digital Urban Population Growth [Million]



An analysis of forecast population growth in major markets over the next 25 years highlights some key differences and some major opportunities. Some countries/ sub-regions will see their overall populations grow, others will see their populations shrink. As an underlying denominator, this is obviously critical to understanding growth in consumption, but this is far from the only consideration. As we go through another generational shift to 2040, the composition of our populations will change markedly.

Urban Concentrations - Firstly, increases in urbanization, especially in AsiaPac and Africa, will create far more concentrated consumer markets, much like those in North America, and to a degree Latin America, today. Europe and America will also see the impact of this change, even though it will be less marked.

Digital, Urban Consumers - Secondly, Generations X, Y and the new Millennials will increasingly comprise the vast majority of the population, bringing with them a complete change in consumer behavior.

Essentially, a much larger population will be living in towns and cities, accustomed to using their digital hardware for consumer purchases. This will translate to the desire for a high quality Omni-channel retail platform, and increasingly, a same-day experience.

India may see greater population growth than China but China's urban, digital population will far outweigh the projected growth in India (especially when accounting for forecast poverty levels in situ).

A number of retailers are actively targeting India, especially since the retail market was recently 'deregulated' back in 2012, but it's no wonder so many retailers are targeting China.

It isn't all about Asia though. The US also has a very strong growth story, and where it beats most other nations is its population growth equilibrium.

That is, it is set to maintain a strong growth balance of children/teenagers, young adults, the middle aged and seniors (silver surfers).

European growth is less significant in this regard, but will continue to be a significant consumer, led by the UK/Ireland, the Nordics, Western and Southern European nations.

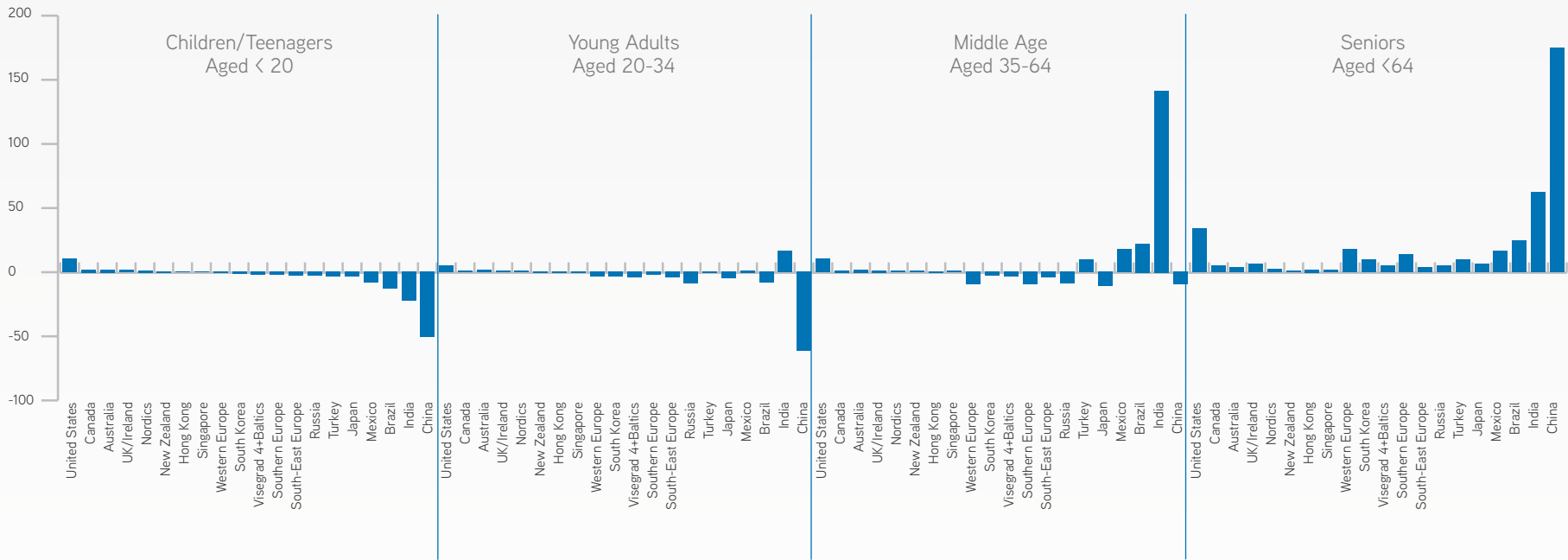
Japan may have a declining population, but its digitally literate, urban population is set to grow significantly. This may not represent a 'net increase' in consumer purchases, but it does highlight a significant step change in terms of a) consumer behavior (shopping online) and b) more purchases being made from urban areas.

The message is clear: we're going to need a far bigger and more robust logistics and warehousing network across our global towns and cities to support vast increases in urban, online demand.

Source: UN, Colliers International

Product Targeting

Fig. 4: Projected Change in Key Consumption Group Populations to 2040



Source: UN, Colliers International

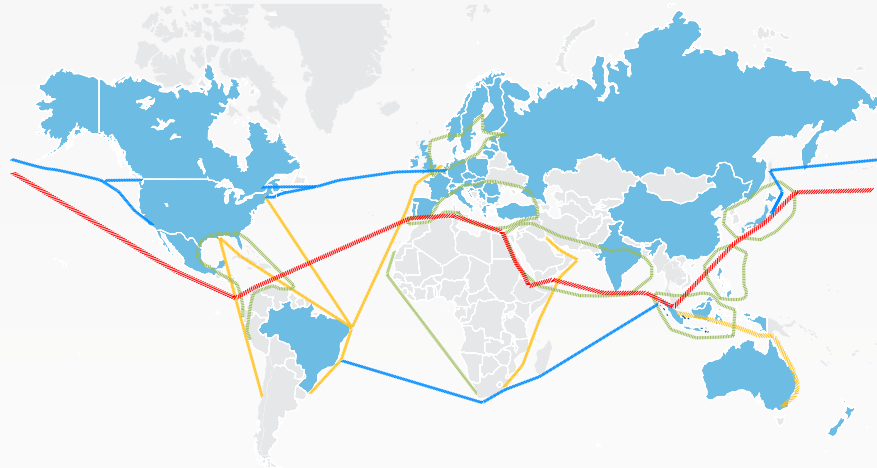
To give an outline indication of the impact changing populations will have on retailers and their supporting infrastructure and logistics operations, we just need to look at changes in the age structure of populations. Split broadly into Children/Teenagers, Young Adults, Middle Aged and Seniors, the messages are stark. If you're a retailer focused on the children/teenagers market, think again.

It's about to get a lot more competitive and without some product re-orientation, your country footprint is liable to shrink markedly.

The positive flip-side of this is that consumers with spending power will be around for longer as populations age, increasing the demand for parcels, pallets and logistics space.

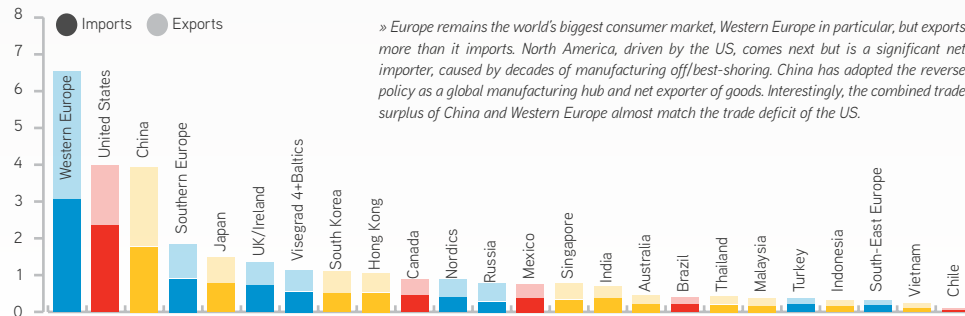
Global Trade Flows

Fig. 5: Map Global Trade Flows



Source: Colliers International

Fig. 6: Imports & Exports (Trillion US\$)



Source: Worldbank, Colliers International

Containerized Growth: The Increasing Importance of Port-centric Logistics

Current population, household/personal consumption levels and manufacturing trends have shaped global trade flows to where they are at today, creating a far more integrated and busy global supply chain. Since 2000, there has been dramatic growth in containerized traffic around the world. Total shipments have grown by 290% (8.5% per annum) from 224.8 M TEU* to 651.1 TEU in 2013. This growth in container volumes has eclipsed worldwide GDP growth of 44.6% (2.8% per annum) over the same time. This significant growth in traffic has evolved alongside a number of key structural changes, which is shaping the way containerized freight is handled across the main trading regions of North America, Europe and Asia, particularly China.

Firstly, the global logistics and shipping industries have become more integrated and sophisticated to manage trade flows as efficiently and quickly as possible. Increasing demand pressure has brought about a huge change in the size of container vessels which have increased in size from 800 TEU* pre-1970 to 20,000+ TEU today.

Major global ports have needed to improve their port infrastructure markedly in order to capture and facilitate growth in global trade brought about by larger vessel size, with deep water ports becoming a necessity. This, combined with capacity constraints, has seen trade routes change in both the North American and European markets, with activity shifting away from the traditional ports, such as LA/Long Beach in Southern California, or the North Sea ports of Hamburg and Rotterdam.

More recently, Suez traffic is also impacting the US ports, where the level of competition has intensified with the opening of the new Panama Canal lock-system in 2015, and the need for US ports to be able to provide 50 ft deep and 150 ft beam handling capacity, as 'Post-Panamax' ships reach 12,000+ TEUs. This has seen East Coast ports such as the Port of Virginia take market share, along with other ports such as Vancouver in the Pacific North-west - ports with modern infrastructure set-up to compete for trade long-term.

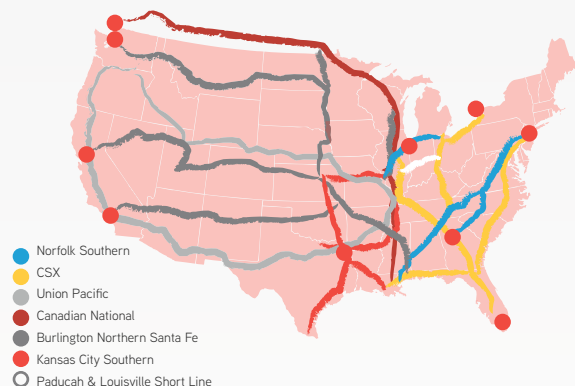
What we're seeing in the post-Panamax world, is that shippers are adapting a 'four corners strategy' to avoid too much reliance on one single port. This has created a competitive global environment for port-centric logistics, with far more emphasis being placed on the ability of ports to handle and enable the quick and efficient flow of goods to consumer markets as cost effectively as possible; with cost measured both monetarily and environmentally. Port-centric logistics are thus becoming increasingly important in managing the flow of goods to both the immediate consumer hinterland, and in facilitating trans-national or regional freight.

With this in mind, we look at the key logistics clusters of each global region, which have been built on a combination of port-centric trade and a sizable consumer hinterland. In particular, we examine how they are set up to compete for trade in the years ahead with specific reference to how new infrastructure is being built and developed, driving the opportunity for new logistics real estate.

*TEU: Twenty-foot Equivalent Unit

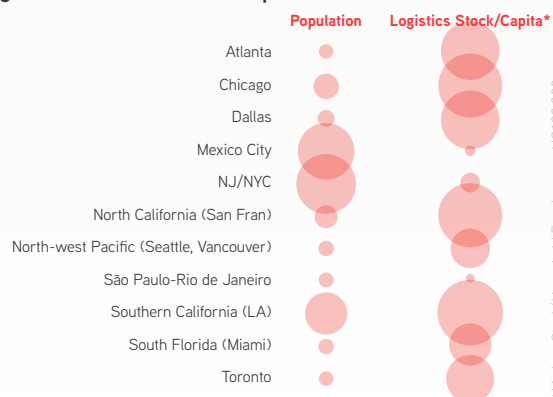
Key American Clusters: Current Trends

Fig. 7: North American Logistics Clusters: The Class 1 Railroad Network



Source: Colliers International

Fig. 8: Americas Clusters Comparison



Source: UN, Prologis, Colliers International

The North American region hosts a number of major logistics hubs, each supported by a high density of modern logistics space and infrastructure. Over the last decade, we have seen two clear trends significantly influence the market:

1. An significant increase in the quality of port-centric infrastructure, adding an extra vital competitive advantage to each key cluster leading up to a post-Panamax world.
2. A vast increase in intermodal traffic, with the likes of Atlanta, Cleveland, Houston and Tampa emerging with winning strategies to facilitate trans-US, and trans-Atlantic freight.

Post-Panamax: Competition for Trade Heating-Up

East Coast Rising

The lead up to the opening of the new Panama Canal in 2015 has seen the competition for a share of North American container imports accelerate. Getting ready for post-Panamax vessels is critical, and these ships are expected to account for 60% of global capacity by 2030, from only 16% today, as trade with China and other Asian countries grows once the canal expansion is completed. The operators of the Panama Canal expect to add at least five extra weekly container ship services for the US East Coast ports once its expansion is completed in 2016, in addition to the 10 Asia-US ships that use the canal each week.

Additionally, more traffic is arriving from Asia via the Suez canal, to the benefit of East Coast ports. Five years ago, a single-digit percentage of containers arriving into the Port of Virginia traveled via the Suez Canal. Today, it's approximately 25% as shippers from Asia—despite the security risks—use this US route as a hedge against unknown rates that will be imposed by the Panama Canal once open.

This is likely to take traffic away from the West-Coast ports, which have already suffered over the past year in the face of protracted labor disputes, resulting in their share of trade falling from 54 to 49% in Q1 2015.

Southern California Fighting Back

The Southern California ports of LA and Long Beach are fighting back, however, deploying a large chunk of the US\$5 billion allocated for port upgrades up to 2017 – the equivalent of the entire cost of upgrading the Panama canal lock system – to improve handling capacity and speed to market. This shows a positive turnaround for Long Beach in particular, which was feeling the negative impact of political/port leadership turmoil back in 2013.

It's not just the southern Californian ports which are reacting to increased competition and needs. Port Cleveland's new express route to Europe uses the Great Lakes-St. Lawrence Seaway System connecting a significant 'Great Lakes economy' (with a combined GDP larger than Germany) to Europe, via Antwerp in Belgium. It has taken market share away from New York/New Jersey, which continues to be featured in the top US markets for space absorption and investment, but is behind the market on the infrastructure and development curve and needs to start catching up to compete.

Intermodal: North America a Global Leader

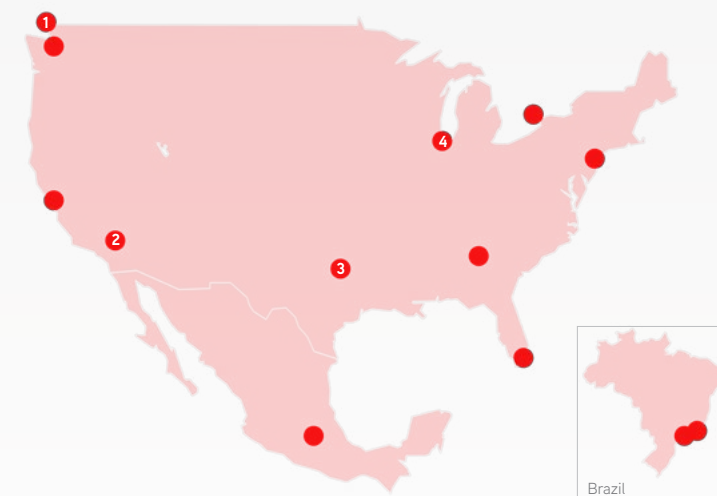
Intermodal freight has been the fastest growing transportation mode in the US for the past decade with US rail volumes growing by over 400% since 1980. A multitude of intermodal infrastructure and facilities, have grown over this time further integrating the US, Canadian and Mexican logistics markets, but also increasing the competition for containerized freight.

In some respects this has been borne out of necessity, with truck driver shortages and a dire need for improvements in road infrastructure, driving the growth in alternative long-haul modes of freight. But it is very noteworthy that all of the key North American logistics clusters are linked by intermodal infrastructure, in particular the Class 1 Railroad Network, which will enable them to maintain their dominant position for many years to come.

It is also clear that being a consumer destination, not just a trading center, will be increasingly important. As per the Hanjin decision back in 2013, Portland lacked the required population base to be a significant North American player, unlike Seattle and Vancouver to the north and both San Francisco and LA to the south. So as the North American population grows, it will be critical for these key clusters to build and maintain the required infrastructure to connect both first mile and last mile logistics using an efficient and flexible supply chain. Just how dominant specific clusters will become will depend upon how well they manage to do this, and create opportunities for large scale modern logistics development alongside. Examples of how certain clusters are responding is visible in some of the infrastructure plans in place highlighted overleaf.

Key American Clusters: New Infrastructure Impact

Fig. 9: Map Americas Key Clusters



Source: Colliers International

1 The Port of Metro Vancouver (PMV) is the fifth largest port authority in North America, based on TEU shipping volume. It is a post-Panamax ready port, which saw its market share of Pacific North West container traffic grow from 23.6% to 37.5% from 2000-2013. As one of the most advanced North American ports, 67.8% of container cargo left PMV terminals by MLB (train) in 2013. The remainder left the container terminals by truck, but approx. 20% of this was trans-loaded for delivery by rail to local trucks for delivery within British Columbia. Net absorption of 2.8 million sq ft in H1 2015, similar to that of Seattle, continues to drive vacancy to lows of only 3.3%. This in turn is driving rental growth and investment interest, creating one of the lowest market cap rates across North America, at 4.9%.

2 Southern California (LA, Long Beach) - The West Coast ports of LA and Long Beach handle 40% of US container traffic and alongside the inland empire, comprising the largest combined US industrial market by inventory (even larger when considering contiguous Orange County). Despite being badly impacted by the West Coast labor dispute of late 2014/early 2015, the market continues to thrive. It was the top US market for investment sales in H1 2015, reaching US\$3 billion, and the second best leasing market, with almost 7 million sq ft of net absorption. It is also set to maintain its strong position through a number of infrastructure developments:

Middle Harbor, Long Beach Container Terminal (Phase 1 launched 2015, completion due 2019). This is a US\$1.3 billion project including 55 acres of newly created land, opening up significant new capacity capable of handling 3 million container units per year, and 22,000 TEU vessels. It has been integrated with new rail terminals to shift more than 30% of cargo from trucks to trains. Green building (LEED) environmental standards are integral to creating a technologically advanced and green facility. Almost entirely automated, it will require 40 to 45% fewer workers than existing facilities, providing much needed port productivity and efficiency.

Additionally, the **Green Port Gateway** project, launched Sept 2015, is a US\$93 million project providing six miles of new rail track laid around the Port of Long Beach, near Ocean Boulevard. This serves the Long Beach Container Terminal, International Transportation Service and Pacific Container Terminal, which combined handle half of the Long Beach port complex. The project also supports Middle Harbor. The rail project allows the Port of Long Beach to meet its near-term goal of moving cargo by on-dock rail to 35% and eventually 50%. The Port of Los Angeles has ongoing works on terminal expansion, which include deepening the main channel from 45 to 53 feet and expanding the Berth 200 Rail Yard, as part of a more efficient/rapid overall goods movement strategy.

3 Dallas / Fort Worth is home to the nation's first holistically planned intermodal/inland port facility - The BNSF Alliance Global Logistics Hub. Started in 1993, this comprises more than 18,000 acres. It consists of two Class I rail lines (BNSF and UP) connecting to Chicago and southern California. It also hosts the Fort Worth Alliance Airport - the world's first 100% industrial airport, and acts as the FedEx Southwest Regional Sort Hub. It also sits on Interstate Highway 35W from Mexico to Canada, and the Texas Highways 114 and 170. This has helped make this one of the busiest markets in the US, and features as the number three US market in terms of both net absorption and investment as of H1 2015.

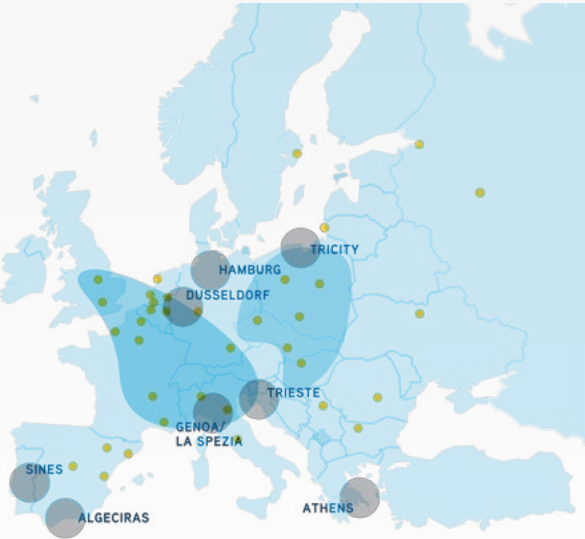
One new upcoming development in Dallas is **UP's Dalport**, a 353-acre development with potential for approximately five million sq ft of new modern logistics/industrial development, set to benefit from continued re-shoring of manufacturing operations to the U.S. and Mexico.

4 Chicago is home to the nation's busiest inland port, which connects to west coast ports in Long Beach/ LA, and is the US' second-largest industrial and logistics market by inventory. Both BNSF and UP are enhancing their on-dock rail capabilities to expedite the flow of cargo from the Ports of Los Angeles and Long Beach, following on from the successful launch of the BNSF Logistics Park Chicago - a 435-acre facility and almost 2,000-acre industrial business park which began in 2000. New infrastructure/developments continue to drive the success of this market - it was number one for net absorption and number two for investment transaction in H1 2015.

Ridge Port Logistics Center is a 1,500-acre development that has the potential for the construction of almost 15 million sq ft of space. This park will feature refrigerated express rail service for produce and other perishables grown in central California and railed to Chicago. Processed foods, grains and other perishables grown and produced in the Midwest will fill the back-haul to California. **Joliet Intermodal Center (JIT)** by the Union Pacific is immediately north of BNSF's LPC and opened in 2011. It has the potential for the construction of 20 million sq ft of space with over three million sq ft already built since its opening.

Key European Clusters: Current Trends

Fig. 10: Map EMEA Key Clusters*



Source: Colliers International

*All ports highlighted in grey, are those which have seen the fastest growth in trade volumes since 2010.

The European market differs markedly from that of both North America and AsiaPac, in that it comprises a far more distributed, decentralized and fragmented market. Although Europe’s population is concentrated in many respects, the majority of the population is spread out over a wider area in a very large number of towns and cities of under 5 million - only London, Paris, Moscow and Istanbul buck this trend. So while we are seeing similar trends, opportunities and challenges as those faced by other global logistics markets, Europe has some unique factors of its own.

One common trend, is that new deep water facilities and increased handling capacity of alternative ports has brought about a change in shipping and freight handling in terms of creating a ‘four corners’ strategy with which to manage freight across the continent. Evidence of this strategy has been growing since 2010, with northern German and Baltic ports, alongside Greek, Turkish and Spanish ports servicing Europe via the Mediterranean witnessing the biggest growth in trade volumes. Concurrently, traditional ports have witnessed a decline in activity, or have remained stagnant at best, as they struggle to cope with increasing capacity and handling requirements.

This has seen a shift in the focus of distribution and logistics activity across the continent. Up until recently, the ‘Blue Banana’ has been the primary area comprising the majority of European distribution, production and logistics operations. The dominance of trade via North Sea ports, combined with high population and GDP/capita density has supported the long-term establishment of this trading area. Yet the combination of new infrastructure, increasing consumer demand from Central and Eastern Europe (CEE) and the emergence of a growing manufacturing belt running from Poland to Turkey, continues to evolve older trade routes. This is leading to a wider distribution of modern logistics transportation networks and facilities.

In future, the need for improvements in freight and supply chain efficiencies - in terms of cost, emissions and customer response times - will continue to evolve the distribution of key European production and distribution hubs. Concerns over labor shortages, as with North America, will place constraint on road freight, driving the need for more automated logistics and transport solutions. Similarly, the growing importance of environmental policy will continue to play into the hands of intermodal modes when freight needs to cover longer distances.

Improvements in technology and rail network operations will lead to more significant growth in intermodal infrastructure and freight creating a network of major, modern hubs able to support customers across the continent, much in the same way we have seen the North American market develop. There are already signs of this taking place, but in a more piecemeal and fragmented manner.

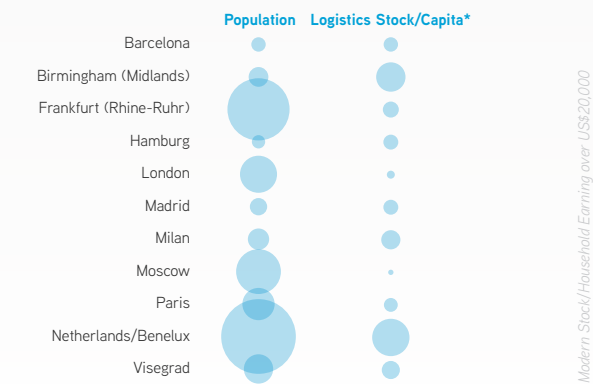
Europe Going Intermodal

Probably the first example of a dedicated European intermodal facility is Daventry International Rail Freight Terminal (DIRFT) in the UK, one of the earliest post-Channel Tunnel road-rail terminals built in the UK. This is a fully integrated logistics park, which started in 1997, providing on-site intermodal areas where freight can be transferred directly from road to rail, to provide an alternative means of distribution on a regional, national or international basis.

DIRFT and other ProLogis Rail Freight Interchanges (RFIs) have been designed to be rail-served distribution parks in line with UK Department for Transport policy guidance (and wider EU policy). There is a strong desire in government, industry and among the general public to move more freight off roads and onto rail. This provides the opportunity to save time, money and carbon emissions and take pressure off a very congested road network.

Critically, in order to deliver this vision, the UK must seek to provide enough rail freight interchanges in the right locations, to ensure that goods can move on and off rail as efficiently as possible. As we’ll see from some of the examples provided, the market is evolving rapidly, in line with changing needs.

Fig. 11: EMEA Clusters Comparison



Source: UN, Prologis, Colliers International

*Modern Stock/Household Earning over US\$20,000

Key European Clusters: New Infrastructure Impact

1 Gdansk, Poland - DCT Gdansk is Poland's largest and fastest growing container port, and the only deep water terminal in the Baltic Sea Region with direct ocean vessel calls from the Far East. The new berth will increase DCT's annual handling capacity (1.2 million in 2014) to 3 million TEU in the first stage of construction. It will be able to handle Ultra Large Container Vessels of capacity exceeding 18,000 TEU.

The second berth is to be completed in Q3 2016 and will allow the terminal to meet growing demand for deep-sea services in Central-Eastern Europe.

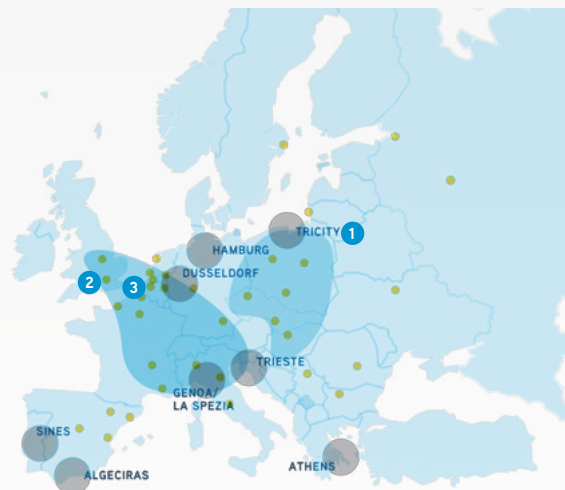
The port has also been expanding its intermodal connections. In 2014, a new railway siding was opened. It has four tracks, each of them is able to accommodate a full size train, and has a full capacity of 780,000 TEU annually. Currently, the share of rail transport in the total landside traffic at DCT Gdansk constitutes 35%. The port handles an average of 120 trains a month. A significant increase is expected in freight transported by rail after completion of the second deep water berth.

2 London Gateway - The project undertaken by DPWorld is located just 25 miles east of London. The port will add 3.5 million TEU to the UK's port capacity, and is capable of handling the largest container ships in a new deep-water facility. The first phase opened in 2013. The port is to be connected to what will be the largest logistics park in Europe. The distribution park was given outline planning permission for 8.6 million sq ft. In August 2015, the first warehouse of 180,000+ sq ft was completed.

The development will create a significant increase in capacity, a change in the logistics network, and the opportunity to move away from conventional distribution methods towards river and short-sea shipping routes.

3 Seine-Nord Canal in France, Belgium, Netherlands - The project was identified by the European Union in 2014 as one of five major projects of the Trans-European Multi-Modal Corridors. The new Canal Seine-Nord Europe will connect the basin of the Seine near Paris to the Scheldt near Lille, providing access to the Belgian and Dutch inland waterways networks. It will be designed for vessels up to 4,000 tons capacity. It will eliminate a major bottleneck on the European waterway network and provide links with six seaports - Le Havre (Rouen), Dunkerque, Ghent, Zeebrugge, Rotterdam and Antwerp - and offer an alternative method of freight transport with access into large urban areas. The improved reliability and lower logistics costs of inland water transport will increase the competitiveness of industry. The construction is to start in 2017 for an opening in 2025 and an exploitation phase to 2027.

Fig. 12: Map EMEA Key Clusters*



Source: Colliers International

*All ports highlighted in grey, are those which have seen the fastest growth in trade volumes since 2010.

United Arab Emirates (UAE)

In the last two decades, the United Arab Emirates (UAE) has become one of the largest logistics hubs in the world. Ranked in the top 30 in the World Bank's Logistics Performance Index it acts as a re-distribution destination, and existing facilities serve to support this purpose as well as the manufacturing sector. Although port infrastructure has improved markedly in recent years, internally the transportation network requires upgrading. Road freight is highly fragmented and does not reach all locations within the region, and rail has not played a significant role in the transportation of goods.

However, planned railway projects - Gulf Railway and Etihad Rail - are expected to redefine logistics and transport in the region and act as a driver for further economic growth. The Etihad Rail will connect major centers with freight terminals, distribution centers and depots located close to major transport hubs, warehouses, and storage facilities across the UAE, including Mussafah, Khalifa Port, Jebel Ali Free Zone, Port of Fujairah and Saqr Port.



Another problem to be resolved in order to boost regional logistics is improving warehouse stock. To date this mainly serves conventional usage, such as dry storage, cold storage and open-yard, but the supply of modern logistics facilities suitable for the e-commerce sector is limited. In order to support online retail growth, the creation of suitable facilities and technological support is being put together by Economic Zones World (EZW) and Dubai Customs, who have launched the e-commerce hub Matajircom. The project involves e-commerce

tailored solutions such as fulfillment facilities and services, financial infrastructure and a payment gateway, marketplace platforms and call center services. The facilities and services will comprise various sized warehouses (including third party facilities), offices, land, transport and logistics solutions. The partners include Aramex, Cupola, CWT-SML Logistics, Mastercard, Mohebi Logistics, Shop Go and UPS. The hub will allow a customer 100% ownership, 100% repatriation of capital and profits, and will offer 0% corporate and income tax.

Key AsiaPac Clusters: Current Trends

Fig. 13: Map AsiaPac Key Clusters

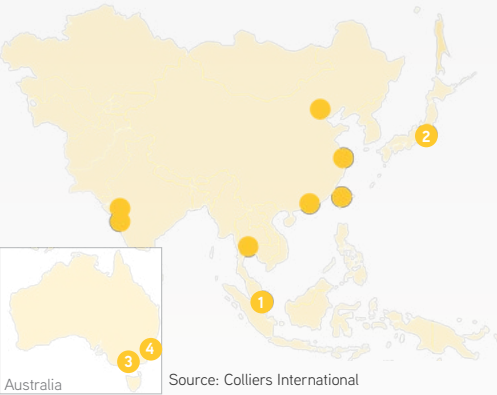
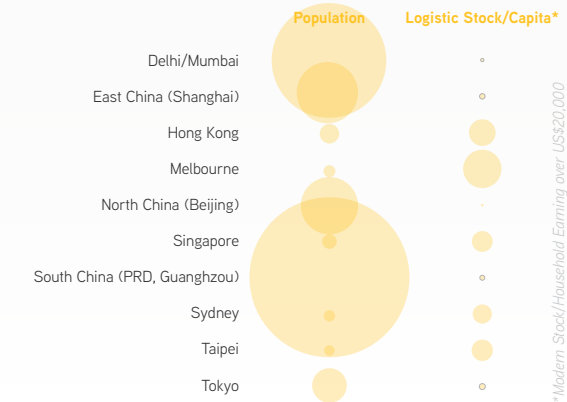


Fig. 14: AsiaPac Clusters Comparison



Source: UN, Prologis, Colliers International

The AsiaPac region is highly integrated in terms of trading partnerships with other countries in the region. China, however, has clearly altered its position over the past two decades, to become the number one global trading partner. Since 2008, China has contributed to more than a third of global economic growth, as a major exporter of goods and importer of goods and commodities. Despite the short-term uncertainties posed by the Chinese economic environment, the introduction of new infrastructure and the rise of e-retailing are set to be the main drivers of long-term logistics volumes over the next decade.

China is growing rapidly by developing its infrastructure penetration on a national level. The key ports and logistics hubs in South China (i.e. Pearl Delta River), East China (i.e. Yangzi Delta River) and North China (i.e. Bohai Rim) are simultaneously stretching their connectivity and capacity. As we'll see, this will serve to enhance greater coordination between cities and increase the size and distribution of logistics hubs. There is more to AsiaPac than China, of course.

1 Singapore has been commanding its position as one of the leading international maritime centers by its well-established sea connectivity spanning across more than 600 ports in more than 120 countries in the world. Currently, Singapore has five container terminals at Pulau Brani, Keppel, Tanjong Pagar and Pasir Panjang Terminals 1 and 2. While the existing port facility provisions have been successful in helping Singapore achieve its position as a global maritime and logistics hub, they are reaching their limits. The port operations at the existing locations have restricted the development potential of the areas immediately surrounding the port due to the need for a buffer zone between the port operation and other commercial and residential uses. However, Singapore is gearing up for its latest round of new infrastructure developments to further strengthen its position as a key global hub.

Port Expansion by 2017 and New Tuas Port: Expansion works at Pasir Panjang Terminals 3 and 4 are currently in progress and will be fully operational by the end of 2017. This will increase the total capacity of Singapore's container terminals by more than 40% to 50 million TEUs per annum.

The development of the new Tuas Port, where sheltered deep waters are available, comprises 741 acres in reclamation land and 5.3 miles of quay frontage designed to accept vessels up to 69 feet in draught. When fully operational, the new Tuas port will be able to handle up to 65 million TEUs per annum. This is more than the present combined capacity of container terminals at Pulau Brani, Keppel, Tanjong Pagar and Pasir Panjang.

Changi International Airport T5 – Works on the new Terminal 5 (T5) and related infrastructure are underway. The facilities of ground-handling and cargo companies may relocate to T5 to better integrate planning for the cargo complex and airport terminal to ensure smooth movement and processing of air freight.

2 Tokyo - The majority of regional and global logistics distribution in Japan has been done through Greater Tokyo where some 30% of total national warehousing space is located. With the four seaports in Tokyo, Yokohama, Kawasaki and Chiba and the support by the two international airports in Haneda and Narita, the Tokyo Bay area is responsible for 40% of the total container throughput. Within the Greater Tokyo area, three major ring roads will be developed with 90% of the projected due to be completed by 2020. This is critical to road freight and the proper functioning of distribution, with logistics facilities in the vicinity of the Ken-o-do area set to benefit most.

3 Melbourne and 4 Sydney - In Australia, the major city ports are the largest by way of value of merchandise trade, with the three busiest ports accounting for 80% of total trade. Melbourne Port Corporation is the largest port, followed by Port Botany, Sydney and the Port of Brisbane.

Sydney is experiencing an unprecedented surge in transportation spending. Big tickets projects include WestConnex, NorthConnex, Badgerys Creek Airport, Moorebank Intermodal (featured on our Intermodal schemes section, page 13) and North West Rail Link, which in total amount to US\$21 billion (\$A29 billion) in construction expenditure.

Victoria is to benefit from US\$17.50 billion (\$A24 billion) of new transport infrastructure projects. This includes US\$8 billion (\$A11 billion) towards upgrades of the Melbourne rail link, US\$499 million (\$A685 million) to the Canbourn-Oajenham Rail Corridor Project, US\$160 million (\$A220 million) to the Murray Basin Rail Project, US\$7 million (\$A10 million) for the East West Link, and US\$109 million (\$A150 million) for the M80 ring road upgrade in Melbourne's west. These infrastructure upgrades will have a downward effect on the costs of transportation and logistics and enable a more effective implementation of supply chain management systems.

Fig. 15: Sydney Botany Port - Moorebank Intermodal Link



Source: Colliers International

China to Forge Ahead

Before we look at the key infrastructure plans influencing China, it is worth reviewing the plans for Chinese Free-Trade Zones (FTZs) as this will continue to have a significant impact on the position of logistics markets across the country. As of Q2 2015, the Chinese government has identified three new Free Trade Zones namely, Guangdong, Tianjin and Fujian, as well as having plans to reform and open up the existing Shanghai FTZ. Given their respective geographical attributes, each of the three new FTZs will be delivering unique functions by integrating a group of key townships and build upon existing major trade entry points to the country.

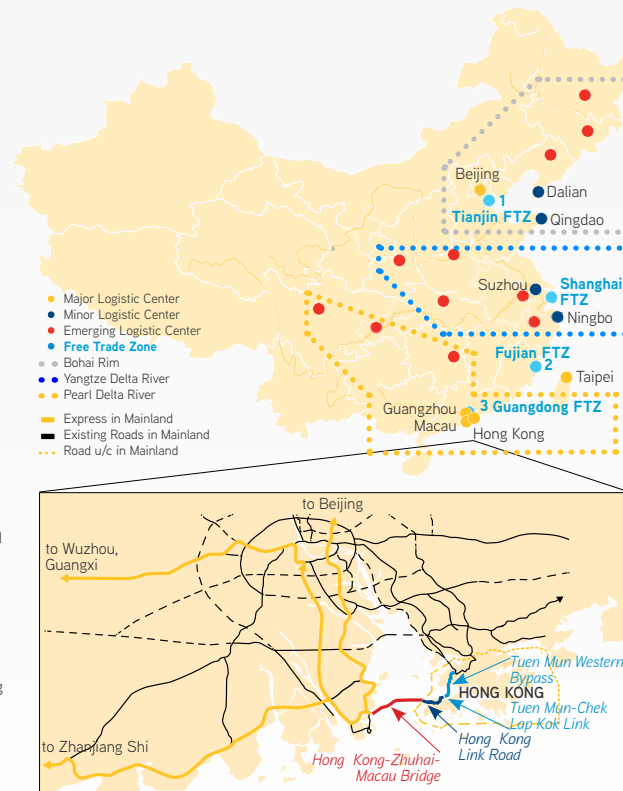
- The Tianjin FTZ (1) in the north will be helping to push ahead the integrated development of the Beijing-Tianjin-Hebei region.
- On the south-east coast, the Fujian FTZ (2), covering three areas in Xiamen, Fuzhou and Pingtan, will be focusing on developing closer economic ties with Taiwan.
- In southern China, the Guangdong FTZ (3) in the Pearl River Delta is of most significance and looks set to become the key trade point for many years- details of which are provided in the summary opposite.

Key Trade and Infrastructure Shifts

In supporting the ongoing growth of trade volumes in Asia, new infrastructure links have been continuously added in a number of different countries.

In China - outside of the three major logistics hubs in the Yangtze River Delta (YRD), the Pearl River Delta (PRD) and the Bohai Rim - the emerging trend is that the demand for logistics facilities is gradually extending out to the north and western part of mainland China away from the coastal areas, where most first-tier cities are located. In these inland locations, the quality of existing logistics facilities remains a key issue, constrained by the lack of infrastructural support such as power and telecommunication. To enhance the development of modern logistics is the new High-Speed Railway (HSR) network, which will cover a batch of second-tier and third-tier cities located in inland areas. The HSR network, comprising over 15,000 miles upon full completion by 2020, will not only substantially shorten commuting times but also enhance the overall urbanization rate. In tandem, the China Railway Corporation is rolling out a network of 18 intermodal terminals across China. One half of these are already in operation at major and emerging logistics centers such as Dalian and Qingdao (in the north), Shanghai on the eastern coast and Chengdu/Chongqing in the western provinces. When combined with the extension of FTZs, this will create a new series of logistics clusters covering a number of smaller but fast-growing second-tier cities.

Fig. 16: Future Logistic Clusters in China



Source: Colliers International

Pearl River Delta - The First Global Megalopolis:

The Greater Pearl River Delta (PRD) including the nine cities of the PRD, plus the special administrative zones of Hong Kong and Macau, has a total official population of 60 million. The actual number is believed to be far higher once unregistered migrants are taken into account. The area is fast becoming increasingly linked by a series of bridges, tunnels, roads and high-speed rail networks to create an urban area of 21,100 square miles (55,000 sq km). By 2030, this could increase to a population of up to 80 million and a gross domestic product (GDP) of more than US\$2 trillion.

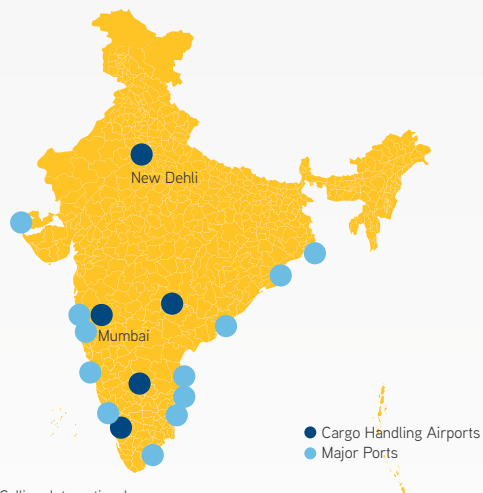
The seeds of change were planted in 2008, when the Chinese government unleashed a plan to merge the PRD's cities - consisting of Shenzhen, Dongguan, and Huizhou in the east; Zhuhai, Zhongshan, and Jiangmen in the west, and Guangzhou, Foshan, and Zhaoqing in the center - into a single megalopolis. Spending of nearly 2 trillion renminbi (RMB) (US\$322 billion) on more than 150 major infrastructure improvements is forging a colossal network of transportation, water, energy supply, and telecommunication facilities.

In the simplest of real estate terms, Hong Kong's problem is a lack of land, and logistics is at the bottom of the food chain from a value perspective. Integration with the PRD allows Hong Kong to broaden its horizons beyond the few square miles in the city itself. Key to this are the infrastructure works underway, including the Hong Kong-Zhuhai-Macau Bridge (HZMB), which is presently under construction. The purpose of this bridge is to provide an efficient transport link between the eastern and western part of the PRD region by 2017.

This will alter the split of economic activity and warehouse/logistics demand, 80% of which lies in the east, associated with most large-scale infrastructure such as Hong Kong International Airport, Shenzhen Bao'an International Airport and the 76 mile Guangzhou-Shenzhen Superhighway. We expect manufacturing and logistics facilities to start clustering across the whole PRD as transport times/costs reduce. Hong Kong being on the one end of the HKZMB, is positioned to benefit from prospective trade flows and logistics throughput. In addition to the Bridge, there will be a 320-acre artificial island which will be used as the 'Hong Kong Border Crossing' facility. A portion of the artificial island is ideal for the development of a modern logistics hub. China Merchants Tsing Yi have scheduled a one million sq ft (92,900 sqm) logistics warehouse facility for completion in 2015.

India: The Next Major Logistics Market?

Fig. 17: Ports in India



Source: Colliers International

Fig. 18: India E-commerce Composition [US\$ Billion]



Source: Boston Consulting Group, Colliers International

India has 95% of its trade volume taken through maritime ports along its 4,671 miles of coastline. The nine coastal states - Gujarat, Maharashtra, Goa, Karnataka, Kerala, Tamil Nadu, Andhra Pradesh, Orissa and West Bengal are home to all 13 major ports, and a further 200 secondary ports. Krishnapatnam Port in Chennai is one of the largest automated ports for exports and imports in the country.

Even though the current aggregate cargo throughput in the major ports is only 70% of total capacity, the government has planned ahead by setting up two new ports at Sagar in West Bengal and Dugarajapatnam in the Nellore district of Andhra Pradesh. In order to improve the integration of port activity with the inland population, the government has budgeted a massive investment of about INR 10 trillion (US\$ 158 billion) into highways and shipping sectors by 2019 in order to support the growth of inland transportation, and therefore the growth of logistics demand.

The following is a list of key infrastructure links to foster the growth of road freight across India.

Dedicated Freight Corridor s(DFC) - The Dedicated Freight Corridor Corporation of India plans to construct two DFCs, with a total length of about 2,050 miles of railway network. The eastern corridor will start from Ludhiana in the north and pass through six states before terminating in West Bengal. The western corridor will start at Dadri and run to Mumbai, passing through four states.

Delhi Mumbai Industrial Corridor - Popularly known as the DMIC, this is a 928 mile industrial corridor between Delhi and Mumbai. The DMIC project aims to have 12 mega industrial zones of around 77 to 97 sq miles.

Amritsar - Delhi Kolkata Industrial Corridor (ADKIC) - The ADKIC will have influence over an area of 93-122 miles either side of the Eastern Dedicated Freight Corridor (EDFC) comprising a total length of 1,142 miles.

Chennai Bangalore Industrial Corridor will have a total length of 348 miles between the state of Karnataka, Tamil Nadu and Andhra Pradesh.

Indian Retail Set for a Boom Period India is realizing the utmost importance of the logistics sector by taking a number of other initiatives, not least to support the growth of a more organized and international retail sector, which is set to explode according to the likes of Morgan Stanley and KMPG.

Organized retail is loosely defined as multi-outlet chains with some distribution infrastructure while independents are the typical small local retailers. Between 2014 and 2020, the organized chains are expected to grow at compound 31%, while the independents grow 10% a year.

Historically, Indian legislators have been protective of the independents because of the political clout they carry, hence the delays in retail reform. However, an even greater political threat has hit Indian legislators - that of food inflation. Because of a lack of scale of local retailers and their associated infrastructure, keeping prices under control through increased competition has become of paramount importance. While there are currently 11 Indian retailers dominant in the market, they tend to be regionally focused without national coverage. This lack of national coverage has meant that retail infrastructure such as cold storage and big warehousing is in very short supply and only international retailers have the cash and expertise to build, develop and manage this functional requirement.

This is why in 2012 the Indian government finally relaxed its regulation on retail Foreign Direct Investment (FDI) but with certain caveats. Single brand stores, such as Nike, could operate in India with 100% FDI but they'd need to have 30% local content within five years. Multi-brand stores can only operate with 51% FDI and must invest US\$50 million in new assets and mainly distribution support - buying existing Indian retailers is not allowed.

This goes hand-in-hand with government support and budgets which place special emphasis on infrastructure projects to modernize, expand and integrate the country's logistics sector. Port development is being accelerated by allowing FDI of up to 100% (under the automatic route) for projects regarding their construction and maintenance. Policies also facilitate a 10-year tax holiday to enterprises engaged in developing, maintaining and operating inland waterways.

The government now allows the development of independent logistics parks, and sponsors the development of Foreign Trade Warehousing Zones (FTWZ), as it faces a pressing need to improve infrastructure.

E-commerce is making steady progress into the Indian market, but is held back by the lack of distribution infrastructure. A hoped-for investment in distribution infrastructure is expected to lead to a significant increase in the share of physical merchandise by 2020, from 23% to 49%. Is this what is driving Amazon's commitment to India since 2014? Some of the key figures are appealing:

Average household income growth is expected to go from US\$6,393 in 2010 to US\$18,448 in 2020. Urbanization will rise from 31% in 2010 to 40% by 2020. The number of internet users will grow from 200 million in 2014 to 600 million by 2020.

Last year Amazon offered 24-hour delivery on 300,000 of its 17 million Stock Keeping Units (SKU) in India. It has also announced that it is offering a collection service via one of India's leading financial service companies using its office network. Amazon will undoubtedly build a distribution infrastructure as part of its plan to grow in India, which underpins just how big a market this will become for many other retailers willing to put their logistics first.

Key Clusters Summary – The Growth of Intermodal

The main themes and messages which can be drawn from this section on key global logistics clusters are:

- **Increasing trade flows and the global integration of supply chains** means that port-centric clusters are an increasingly important part of the logistics market, in order to enable the efficient and cost-effective flow of goods. This is increasingly visible from the huge sums of investment going into making ports capable of handling larger containerized vessels, creating a clearer hierarchy of global ports and trans-shipment feeder ports.
- In the more established consumer markets of North America and Europe, **linking ports to an efficient, continental transportation network is increasingly important**. Poor road infrastructure and trucker shortages in North America, combined with the ability and willingness of railroad operators to get involved in building and maintaining an efficient rail network has helped drive a new generation of large intermodal freight hubs – connecting containerized sea freight with inland distribution options.

- **The development of this market over the last 10 years (and longer) has created a new series of large-scale, high value assets which have taken a first-mover advantage in staking their claim as the dominant centers of the North American logistics market. This is an important signal for other global markets in terms of 'what happens next'.**
- **In Europe, only the UK has developed a genuine intermodal network and set of facilities**, but it is yet to play a significant role in freight handling. This will change over time, however, as schemes such as London Gateway, by DP World, establish themselves as key UK port-centric, intermodal logistics facilities. UK policy and road freight pressures support the growth of such facilities, but a lack of rail operator efficiency and internal intermodal facilities has held the market back to date.
- This is very much the same pattern in continental Europe, but **the EU TENs project (Trans-European Networks) has been developed to improve the operational capacity of intermodal freight**. This is finally starting to feed into an increase in intermodal freight – goods from Athens and Gdansk can now be transshipped into key distribution hubs on the continent by rail, and inland waterways are being put to better use in the core distribution markets to take the pressure off congested road freight.

- **In AsiaPac, this form of freight is yet to be developed.** Although in Australia, big ticket infrastructure projects including Moorebank Intermodal and the North West Rail Link in Sydney illustrate that this is becoming an increasing feature of this market. As global giants such as China and India develop their port-centric facilities and link these to a developing rail infrastructure, the growth in AsiaPac intermodal logistics is set to become very, very big.

- The benefits to the use of intermodal are clear:

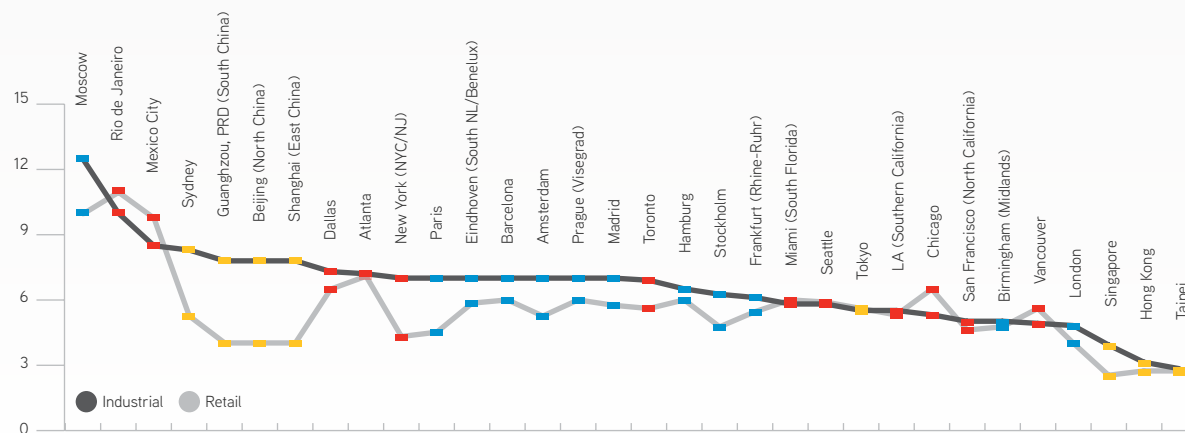
- it reduces road congestion and CO2 emissions and an over-reliance on dwindling trucker resources;
- distances over 200 miles (some operators claim as low as 120 miles) can be served more cost effectively from both a monetary and environmental perspective – and response times are also faster;
- it is a natural fit for increasing levels of containerized freight traffic, and it ties into a more efficient, automated and integrated global supply chain.

All of which leads to a downward effect on the cost of managing transportation and logistics and enable a more effective implementation of supply chain management.

- **Having inland intermodal hubs and facilities is obviously a critical piece of this jigsaw, and we can see how Atlanta, Dallas (Fort Worth) and Chicago have become leading players** in the North American market – combining their distribution capabilities with a strong consumer market. A review of current **prime logistics yields**, versus their retail counterparts, shows just how important logistics assets are **in these locations, surpassing the yields currently paid for retail**. This is an important message for the investment community. As this report shows, there are clearly a large number of long-term intermodal and port-centric opportunities to consider globally.

The next part of the supply chain, where logistics markets continue to evolve and many more opportunities remain, is in the development of both 'First Mile' and 'Last Mile' logistics – managing the distribution and return of consumer products in an increasingly digital world.

Fig. 19: Industrial vs Retail Cap Rates [%]



Source: Colliers International

Port-centric Intermodal Schemes



Key Outline	Moorebank Intermodal Precinct, Sydney <p>The Moorebank intermodal freight precinct is a new \$A1.5 billion JV between Logistics group Qube and rail operator Aurizon. It is a nationally significant project aimed at reducing the projected growth in road freight traffic from Port Botany, by up to 3,000 fewer truck journeys a day, which equates to 37,283 fewer miles traveled by import-export freight trucks on Sydney roads.</p>	London Gateway Logistics Park <p>London Gateway combines one of Europe's largest logistics parks with the UK's most advanced deep-sea port - a gateway to the world, creating the ultimate in UK port-centric logistics.</p> <p>It provides exceptional benefits and market advantage for supply chains into London, the South East, the Midlands and across the UK in a highly sustainable way.</p>	GLP Park Lingang, Shanghai <p>GLP Park Lingang is collaboration between Global Logistic Properties and Shanghai Lingang Group, the exclusive logistic park developer in the Lingang Industrial Area. GLP's professional capabilities in logistics property development, coupled with the Shanghai government's full support, make GLP Park Lingang an excellent modern logistics park for retailers, manufacturers and 3PLs.</p>
Key Features	<p>The new freight precinct be a single development comprising Moorebank Intermodal Company's (MIC) and the Sydney Intermodal Terminal Alliance's (SIMTA) adjoining sites. This will enable import-export (IMEX) and interstate shipping containers to be transported by rail freight via the Southern Sydney Freight Line (SSFL), connecting to the terminal at the southern end of the new precinct.</p> <p>Road freight access will be linked from a new Moorebank Avenue/Anzac Road intersection via the M5 motorway.</p> <p>The facilities will be open access, enabling any rail or road operator to use the IMEX or interstate terminals to provide freight transport services. In particular, the Moorebank intermodal freight precinct will create a single development able to handle:</p> <ul style="list-style-type: none"> 250,000 import-export (IMEX) containers a year from late 2017, and ultimately up to 1.05 million IMEX containers a year; and 250,000 interstate containers a year from around 2019, and ultimately up to 500,000 interstate containers a year. 	<ul style="list-style-type: none"> Fast and efficient port-centric distribution opportunities with a single management team for both port and logistics park Enhanced port automation with state-of-the-art handling equipment and a 24/7 operation, Tri-modal infrastructure via sea, rail and road including channel tunnel connection On site rail terminal connects directly to the UK's strategic rail freight network (W10), W10 rail gauge to accommodate high cube container boxes Connected to an 8 lane motorway. Situated closer to the Midlands and the North than competing ports, reducing supply chain costs, saving on lorry miles and CO2 emissions 	<p>It is ideal for both domestic and international distribution.</p> <p>Particularly for handling containerized sea freight from the Yangshan deep-water port which lies 20 miles away.</p> <p>It has an immediate transportation network which it connects to including other key modes of freight transportation</p> <ul style="list-style-type: none"> Intermodal Train Yard nearby 2.5 miles from Shanghai Nangang Roll-Roll Terminal 23 miles from the Pudong International Airport 46.6 miles from the Shanghai CBD 50 miles from the Hongqiao Airport
Logistic Park Capacity	<p>The first stage of operation is to begin in late 2017, with the first stage of the interstate terminal expected to start operating in late 2019.</p> <p>This will support the development of the 593-acre site, comprising 390 acres of developable area, to provide an estimated 91 million sq ft of modern warehouse space.</p>	<p>Over 9.25 million sq ft (859,000 sqm), available on 560 acres (226 ha). Common User Facility offering flexible storage solutions.</p> <p>New 316,000 sq ft building ready to occupy in 2015.</p> <p>Deliverability with fast track planning for warehouse, production and office buildings</p> <ul style="list-style-type: none"> In-house development expertise already in place Plots for up to 1.2 m sq ft ready for development 	<p>GLP Park Lingang provides 8.9 million sq ft of high-quality logistics facilities with room for expansion. The Park is in operation and existing warehouse facilities include the following features:</p> <ul style="list-style-type: none"> GLA 10,764 sq ft per loading dock; 160 loading docks; Fourcontainer truck loading docks for each unit (approximately 32,292 sq ft on average, with an 38 foot wide ramps for the largest trucks.

First Mile - The Rise of 'Mega-DCs'

Depending on the type of products, destination/catchment of delivery, delivery expectations and the proportion of online sales conducted by a retailer and/or their logistics partner, distribution centers can vary significantly in terms of their size, specification and locational requirements. Across the global logistics markets, it is common to see a range in sizes of center, but there is also a clear sign that a rationalization process is ongoing, driving the creation of mega-sheds covering national and regional markets, as the first point of dedicated distribution.

Technological Sophistication

Demand for these facilities is being driven by increasingly sophisticated distribution needs, particularly as e-commerce demand continues to grow. As a matter of operational efficiency, retailers and logistics companies have been engaging with a full range of mobile technologies and the deepening utilization of sales data analytics, which are essentially spun off from their digital platforms, to help formulate process-driven facilities.

One of the key features of e-commerce being progressively incorporated into smart distribution centers is Radio Frequency Identification (RFID) which is a proven, effective feature for managing and receiving stock, picking, inventory and security control, sortation, conveying and shipping. This is enabling logistics providers operating fulfillment centers to link up the various parts of the supply chain, to provide accurate inventory management reporting. It also allows operators to collect product characteristics (e.g. expiry date, batch size, color and size) of their customers, which translates into useful business analytics to help service their customers.

Products can increasingly be delivered from distribution centers to high-street shops and shopping malls as well as a number of smaller hubs located close to the sub-markets where retail customers are living. As we'll see from our last mile case examples, this is enabling certain retailers to be far more pro-active with their sales and marketing, as opposed to purely reactive.

Consolidation

In some markets, especially those with a diversified customer base and a shortage of labor, logistics facilities with advanced automation technology are enabling much higher productivity rates and improved delivery times, generating economies of scale. There is a clear trend of many pan-national or regional operations to be consolidate into the one key DC hub. As with the examples highlighted, automation is now a critical part of enabling an efficient operation, helping reduce returns and fault losses which had previously resulted from less efficient, manual systems.

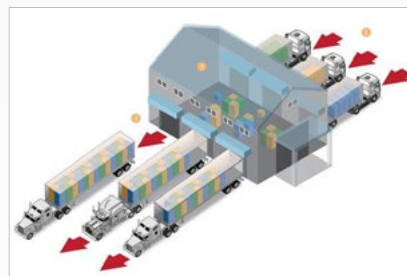
Bigger and More Automated

Due to the growth of e-retailing and the corresponding space requirements to install more sophisticated facilities such as automated picking and sortation systems, there is a noticeable trend that the overall size of the total floor area is getting larger, whereby modern 'first mile' distribution facilities comprise a floor area of more than 1 million sq ft.

Fig. 20: Mega Warehouse and Cross Dock

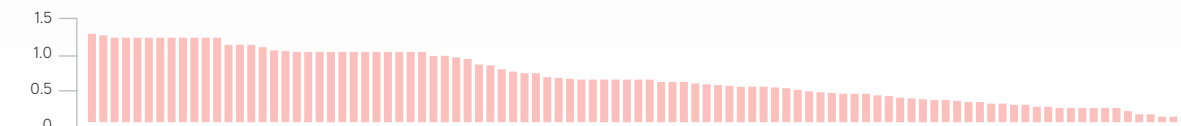


Source: GUS-EX



Source: Jason Dobbins

Fig. 21: Amazon Logistics North American Facilities Size Ranges [Million sq ft]



Source: Amazon, Colliers International

Before 2011, only one of 10 Amazon FCs in Europe was larger than 969,000 sq ft. Currently, 10 out of 27 Amazon distribution centers are larger than 969,000 sq ft. Zalando has expanded its DCs in Erfurt and Mönchengladbach from 840,000 sq ft to over 1.39 million sq ft.

In China, the average set up is now in the order of 1.6 million sq ft with 38-foot headroom. However, there are sizeable developments with total floor areas exceeding the typical benchmark. For example, GLP Park Lingang in Pudong New District of Shanghai is 1.99 million sq ft, Interlink in Hong Kong is 2.3 million sq ft and Logistic Republic - Taipei Park in Taipei will be 2.84 million sq ft upon full completion in 2017.

In fact, e-retailing demand is growing so fast, facilities need to be designed with expansion space built-in, given the distinct possibility that a retailer's needs will have outgrown the facility by the time it is ready. In many markets, this is putting significant pressure on what are already very tight land and planning conditions.

Sustainability

One of the other key features of new, cutting-edge DCs is just how much sustainability is being factored into planning and design. Top-tier distribution centers across all regions are being provided with a number of green features. Interlink in Hong Kong is built in compliance with LEED (Leadership in Energy and Environmental Design). Logistic Republic - Taipei Park in Taipei and 4 Pandan Avenue in Singapore are certified as sustainable developments.

The John Lewis facilities at Magna Park have achieved a BREEAM 'Very Good' rating, exceeding internal benchmarks for reducing energy consumption..

Alternative Formats

The other key trend is the increase in height. For traditional DCs this is in order to house the use of automated racking, and an increasing proportion of office space, ideally on mezzanine floors, given that the manual work is now tied to programming and managing the technology and equipment. In Asia, height takes on a different dimension. While DCs have become much larger in size, special mention has to go to the Interlink facility in Hong Kong. Unlike the vast majority of global, cutting-edge DCs, this facility is situated in one of the most densely populated parts of the world. As a result, it is the world's tallest logistics facility, comprising 24-stories. As cities continue to urbanize, and land pricing becomes increasingly competitive, multi-story DCS supporting global mega cities are likely to be a thing of the future.

First Mile: Scheme Examples



Key Outline	<p>Skechers National DC Moreno Valley, California</p> <p>When SKECHERS USA needed to consolidate some West Coast distribution operations, they created a new facility in Moreno Valley, CA. Highland Fairview developed this US\$250 million warehouse complex, which now serves as Skechers' new North American Operations Center.</p> <p>Upon opening, this was the largest warehouse in the United States, extending half-a-mile end-to-end along a busy Southern California freeway.</p>	<p>John Lewis Cross-Dock DC Magna Park, Milton Keynes Gazeley</p> <p>The site is in a strategic location, with easy access to the M1, on the eastern edge of Milton Keynes. Development of the park began in the early 2000's, and in May 2012 Gazeley completed their 100% ownership through the acquisition of a 50% stake held by joint venture partner Land Securities.</p> <p>John Lewis has 1.3 million sq ft of sustainable warehouse space across two built-to-suit facilities of 650,000 sq ft and 668,000 sq ft respectively. Another 638,000 sq ft built-to-suit warehouse is now under way for the leading UK retailer.</p>	<p>Interlink, Tsing Yi Goodman, Hong Kong</p> <p>This project is one of the largest warehouse and distribution centers in Hong Kong. The development comprises a site of approximately 301,000 sq ft (28,000 sqm) on Tsing Yi Island and comprises ca. 2.4 million sq ft (222,000 sqm) of modern warehouse and distribution space.</p>
Key Features	<p>The warehouse sports the latest in automated product-pickers and computerized conveyor belts which is capable of mixing 21,000 boxes of goods every hour. The equipment finds, selects, moves into position, and prepares for packaging and shipment and orders from stores all over the country, as well as from individual consumers shopping online for home delivery. It also remembers where each item each box of shoes, of whatever size, color and style—is at every moment, until it leaves the building in a truck for delivery.</p> <p>In total the warehouse comprises 81 million cubic feet of space and employs 750 people who work in the upstairs office and run the equipment via programming and maintenance.</p>	<p>Their first 650,000 sq ft facility was a cutting-edge cross-docking facility built to cope with the expansion of their rapidly growing online business. Dominated by cage-like structures up to 49 feet high, 246 feet long. Each 'cage' is an ASRS (automated storage and retrieval system) or OSR (order storage and retrieval) home to the distribution center's robot workers. Around 20% of the goods are packaged by hand to be posted direct to internet customers. The remaining 80% are destined for one of John Lewis's 35 department stores. At peak periods well over 5 million units pass through the warehouse a week.</p>	<p>It is unique in that it is large and multi-story. It required extensive demolition works to the existing structure and rebuild. There is a 49ft wide ramp to accommodate container trucks of up to 45 feet in length. Some 18 lifts are built-in for cargo and ramp access floors. The building is so high that fire trucks cannot reach the top floors unless they drive all the way up the ramps. Due to this, each floor has been fitted with three large 10 x 10 foot columns. Between each of these columns there is a fire shutter.</p>
Sustainability & Design	<p>The building boasts solar panels and other energy-saving green-building features. The reception area has floor-to-ceiling windows. One of the primary objectives of the project was to make sure that all of the building components complied with California Title 24, a mandated building energy efficiency program of the California Energy Commission. It has a 1.8 million sq ft photovoltaic roof.</p>	<p>The first building achieved a BREEAM 'Very Good' rating. It has exceeded all benchmarks to reduce energy consumption. The building's eco measures include rain water harvesting and recycling, energy efficient lighting, solar thermal panels, low water use appliances, FSC approved timber, solar photovoltaic panels, low toxicity paints, recycled and recyclable materials and local provenance vegetation. Over the 20-year lease of this facility, the customer will save in excess of US\$7.3 million (£4.7 million). Illustrating that continued commitment to sustainable solutions, produces clear business benefits.</p>	<p>Received a Gold Standard certification from HK BEAM (Hong Kong Environments Assessment Method) - first of its kind in Hong Kong. Built in compliance with LEED (Leadership in Energy and Environmental Design). The base building is having adequate power reserves built into the design to allow for air-conditioning to each floor and battery charging points. There is also a base building refuse and recycling area for wooden pallets, paper and cardboard.</p>

Last Mile - Urban Logistics

The urban environment is a specific challenge for logistics companies. The last mile of the logistics chain, which accounts for a large proportion of shipment costs and complexity of operations, is often the most inefficient. This distribution inefficiency in urban areas comes from low load factors, long dwell times at loading and unloading points and a high number of delivery requirements to individual customers within a short time.

Logistics providers and retailers are under pressure to improve load factors, while reducing air pollution, noise emissions, congestion and time loss. The attempts to tackle the environmental problems in cities are leading to more expensive and complicated logistics processes, particularly in Europe. This is why alternatives such as electric and hybrid freight vehicles are being developed and considered. It is also why cross-docked DCs on the edges of towns and cities are growing as a go-between nation/pan-regional DCs and the variety of urban logistics and retail fulfillment options which are sprouting up across cities globally, by servicing them with smaller transit vans as opposed to larger trucks.

Urban Warehouses

As the essential element in improving urban logistics is to limit deliveries to the shortest possible route, e-commerce retailers have started to include smaller urban warehouses in their network in order to shorten delivery routes and be able to provide quick delivery services to online customers. In recent years Amazon has added a network of smaller regional hubs to its fulfillment centers in the UK, allowing the retailer to carry out same day deliveries. In 2015, Amazon introduced one-hour delivery on selected items for customers in east and central London, a move which would not be possible without a closely located warehouse. London is the first city outside US where Amazon offers such service and rumors are that Amazon Fresh is coming next.

Amazon Prime Now

Amazon's 'Prime Now' service is a recent roll-out, available in more than 16 major US cities, offering Amazon Prime customers deliveries in as short a time as 1 hour. The only ordering vehicle for the consumer is via a mobile application. This delivery time is made possible by the use of smaller, local 'urban' warehouses that are stocked with the 25,000 items made available on the Prime Now mobile application.

The process differs to larger-scale DC operations, in that the order is processed and picked manually, and then placed in a brown bag for delivery. A courier picks up the order and delivers to the customer. The range of couriers used varies considerably by location but now includes Uber. It is also worth noting that some products are picked up by couriers from regular, local grocery stores to complement orders.

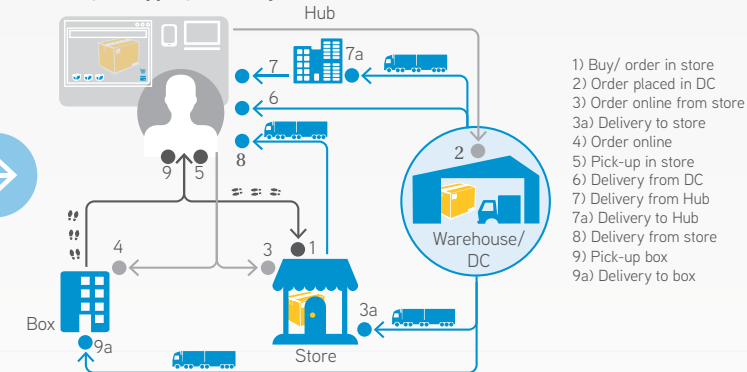
This new type of delivery demands a different DC set-up, from that of the traditional XL-XXL sized warehouse which utilize UPS or FedEx type deliveries. The main differences are:

Fig. 22: Evolution of Urban Logistics Needs

'Traditional' Shopping/Delivery Methods



'Evolving' Shopping/Delivery Methods



Source: Colliers International

Size - compared to regular Amazon DCs that house millions of products, 'Prime Now' only offers around 25,000 items in its online catalog. With known Prime Now facilities ranging in size from 50-75,000 sq ft, this makes them around 10% of the size of an average Amazon DC.

Manual vs Automation - the pickers are manual, and need to be fast to match the two hour turn around delivery expectation.

Location - 'Prime Now' facilities are located in far more densely populated, inner city communities in order to serve city locations within the narrow time window. This compares to XXL DCs which are located on key transport connections outside city areas, or XL DCs which are typically located on main arterial routes on the edge of city boundaries.

Loading Bays - are essentially cross-docked, and must be automobile and bike friendly for the brown-bagged goods being dispatched. They still need traditional truck docks to receive regular orders of products, but at much lower frequencies.

As we'll see from our case studies, urban warehousing and other forms of last mile options are on the rise, driven by same day delivery and increasing customer expectations.

Reverse Logistics

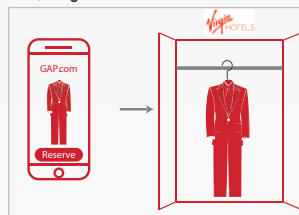
Free returns of online orders allow customers to order and return many items without too much hassle and additional costs. However, the scale of returns is a real burden for retailers as it can be a complicated and costly process - it is estimated that between 25 and 40% of the goods ordered online in the UK are returned, while in Germany, this figure may reach up to 50%. So while it is relatively easy for customers to return unwanted items - whether by sending them back, dropping them off at store or in a locker - some logistics providers have grown to specialize in handling returns. Clipper Logistics operates returns for

Zara, John Lewis and Tesco. While their DCs require a large number of employees to check the condition of the returned items, and sometimes clean and even restore them, it is the technology that helps the company to run such large scale return process for multiple retailers.

One of the largest logistics sites in Europe - Otto Group's logistics center in Haldensleben, Germany, operated by Hermes Fulfillment - picks and dispatches up to 300,000 parcels a day. Hermes' operations include reverse logistics and the company has automated part of the returns handling process using an OSR Shuttle, a semi-automatic picking and storage system from KNAPP.

Last Mile Innovation - Americas

GAP/ Virgin Hotels



Source: GAP, Colliers International

GAP Cooperation with Virgin Hotels

Recent innovations include a new service with a partnership of Virgin Hotels that will provide guests the option to have the online orders delivered straight to their hotel room. Gap and Old Navy have launched their Instagram pages on like2b.ny where posted photos are linked directly to the featured product on their ecommerce sites, right from customers' mobile phones.

Amazon Prime Now



Source: Amazon.com

Amazon Student



Source: Jason Grube

Amazon Treasure Truck



Source: Amazon.com

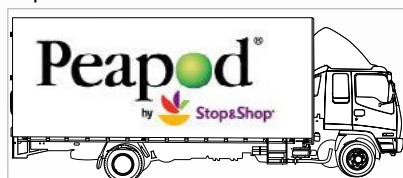
Amazon's 'Prime Now' is growing fast. Cities next on the list for this service look likely to be Houston, San Antonio, Nashville and Denver given the size of their young, urban population catchment and proximity to larger Amazon DCs.

'Amazon Student' opened its first 'store' at the campus of Purdue University in West Lafayette, Indiana in Feb 2015. Termed a not-so-catchy "customer order pickup and drop-off location", this allows Purdue students to collect orders and make returns. The 'store' is essentially a serviced room comprising Amazon lockers accessed using a code. Each of the five facilities in Indiana is staffed by Amazon employees, who can open a locker for customers if required. Amazon Student gives university students the benefits of its Prime membership scheme, such as free shipping and video and music streaming for US\$49 (£32) a year - half the usual price. Amazon is inviting other educational institutions to work with it and open similar centers on their campuses. It's certainly a smart way of building your future customer base, early.

Amazon: Treasure Truck

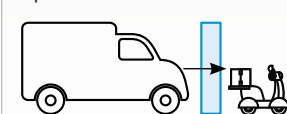
Amazon launched a new service called 'Treasure Truck' in its home city of Seattle in June 2015. It is basically the equivalent of a neighborhood ice cream truck, selling just the one vastly discounted item. Customers can see the Treasure Truck's daily deal on Amazon's mobile shopping app. Once purchased, you can meet up with the treasure truck at a predetermined time slot and location to collect your order. Focused on 'popular, more affluent neighborhoods, this may not be very scalable, but it signifies how Amazon is using its technological and logistical advantages, combined with, big data know-how, to stay ahead of the competition.

Peapod Truck

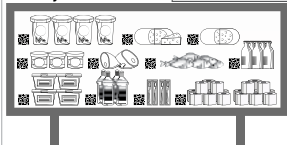


Source: Peapod, Colliers International

Peapod Wareroom



Peapod Virtual Grocery Store



Peapod has developed a much more flexible and distributed click and collect service in addition to its warehouse portfolio. In 2011, Peapod launched **virtual grocery stores** at commuter rail stations in Boston, Connecticut, New York, New Jersey, Philadelphia, Washington D.C. and Chicago. Commuters can use their mobile phone (and a free Peapod Mobile app) to scan a QR code of the products displayed in the virtual aisles on billboards. In 2012, the first pick up locations were opened. In 2014, the company opened 89 new pick-up points, bringing the total number to 209.

Customers can pick up orders at Stop & Shop and Giant grocery stores. In the Chicago area, orders can be picked up from locations in Palatine, Deerfield, Lincolnshire, Schaumburg and Arlington Heights – this includes **re-purposed bank branches or fast-food restaurants**, which is a very innovative approach. The company also opened a new distribution center in the New Jersey area, and has announced it wants to expand in New York, where locally based Fresh Direct is a market leader.

Peapod Wareroom: These local, last mile 'warerooms' are similar to Prime Now in many respects, in that they are small urban community locations, and manually operated. Ranging in size from 5,000 – 8,000 sq ft, any cross-docking is done in the parking lot limiting the need for a building/paying extra rent (their DCs are more sophisticated). Turnaround times are lower, as they only operate to a next-day promise at present. Customers need to register to be able to shop. The minimum order value is US\$60 and delivery charges are between US\$6.95 and US\$9.95, depending on the value of the order. According to the company's estimates the average basket size is over US\$157 and customers typically shop twice a month.

Last Mile Innovation - EMEA

Cargo Cycles/Cycle Logistics

With the increasing congestion in the city centers prolonging delivery times, increased cost of operating both large and light freight vehicles within city boundaries and more expensive (than out-of-town) urban warehouses, logistics operators and retailers should consider alternative delivery methods such as cargo bicycles or tricycles. Cargo cycles are not only a zero emission alternative but, in many heavily congested cities, a faster delivery alternative.

As an experiment, **TNT Express** introduced in 2013 a 'mobile depot' (a 40-tonne truck) in Brussels to improve the efficiency of its parcel delivery operations in the busy city center, while contributing to a better environment. From a truck parked in Parc du Cinquenaire parcels are collected and transported further by electric tricycles (cyclocargos).

This delivery method is not just an eco-friendly fantasy, as there are already several successful cycle logistics companies operating in European cities, such as:

- > **Outspoken Delivery**, an innovative cycle logistics operator established in Cambridge in 2005. The company have recently extended their services to Glasgow and Norwich;
- > **TXITA**, the first Spanish cargo-cycle company operating in San Sebastian;
- > **Triciclò**, a cargo bike logistics operator in Milan, Padova and Bologna;
- > **Pony Zero**, established in 2012 in Torino. In 2015, the company entered into an agreement with JustEat for food delivery services and started to operate in Rome and Milan;
- > Zurich-based **Imagine Cargo**, recognised as one of the most innovative companies in Europe, launched a same day and next day delivery service between Vienna and Graz, and more recently between Vienna, Linz and Salzburg. The parcels are being transported from city to city by fast rail and within a city by local cycle delivery companies;
- > **ReCharge** - cargo bike courier service based in Brighton, operating in central Brighton and Hove and also in London. The company works as a sub-contractor for DHL.

Click-and-Collect

Home delivery typically involves additional costs due to repeated deliveries. Given that customers who pick up their order in-store are now making additional purchases, this mode of delivery is becoming increasingly popular for retailers – and customers.

The service is increasingly popular **in the UK**, with over one third of customers choosing this type of delivery, in comparison to only 13% in the US and 5% in Germany. Planet Retail foresees that by 2017 the number of people using click & collect service in the UK will double.

Halfords, British retailer of car parts, camping equipment and bicycles, reported that in 2014 over 90% of its online orders were collected in store. Click & collect orders at John Lewis overtook home deliveries and account now for 54% on its online orders. As there are only 45 John Lewis stores across the country, the possibility of collecting orders from Waitrose supermarkets is a crucial factor in the popularity of this service – 66% of click & collect orders are picked from Waitrose branches.

In France, the click and collect service offered by grocery retailers, so called 'Drive' is proving to be extremely popular. Online orders can be picked in a collect and drive location, where items are loaded directly to the trunk of a customer's car. In 2013, 15% of French households were buying groceries online and collecting them from drive-through pickup points. All major supermarket chains offer such service and currently there are more such drive and collect points in France than supermarkets. The first such service was opened by Chronodrive in 2004. The orders are ready to pick up already two-three hours after online purchase. Several price comparison websites are used by customers wishing to use the cheapest Drive service (for example Monsieurdive.com).

Click & collect service is less popular **in Germany**. However, the demand for this type of collection is also increasing. German eBay launched new click and collect service in 2014. The new service requires partnership with various brick-and-mortar retailers to allow consumers to pick up items purchased online in local stores, free of charge. Among eBay partners are retailers such as Butlers, Gravis, Porta, Möbel Boss, Atelco and Motoo.

In Poland, click and collect services in-store is limited as many large omni-channel retailers are yet to offer such options. It also does not seem to be a preferable delivery option for Polish customers. According to the recent Gemius study, the vast majority of Polish e-consumers (82%) choose home/working place delivery as the main collection option. The largest department store **in Spain**, El Corte Inglés launched click and collect service in 2014. Similarly to John Lewis in the UK, the retailer has a significant advantage over other retailers as the orders can be picked up not only from their department stores, but also from Supercor supermarkets.

TNT Mobile Depot



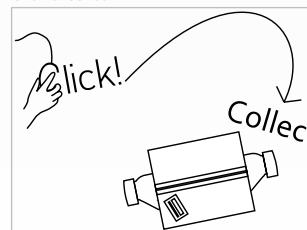
Source: TNT

Cargo Cycle



Source: Pony Zero

Click & Collect



Source: Colliers International

Last Mile Innovation – EMEA and AsiaPac

Parcel Lockers

The popularity of parcel lockers is also on the increase in Europe, and the network of lockers across the country is expanding quickly. Particularly in Germany, the Netherlands, Belgium, France, Poland and the UK. Around 11% of Polish online customers choose collection from parcel lockers where the main parcel lockers providers are InPost and Pocztą Polska.

In 2014, InPost introduced a payment on delivery option in Poland – each locker is now equipped with credit/debit card terminals, and more than a 50% of lockers enable contactless payments. This innovative solution is an important move in the market where a large number of clients prefer to pay on collection. InPost lockers are currently in 20 countries, including 14 EMEA markets. Lockers are also being provided by many other companies; Packstation is a popular locker service run by DHL in Germany, other European providers include Hermes, Collect+, Doodle, KEBA and Amazon.

In April 2015, DHL Germany in partnership with Germany's largest housing company, Deutsche Annington, launched a project to install parcel delivery boxes, Paketkästen within apartment buildings managed by DA. The first lockers were installed in Berlin and Dortmund.

Soon we will also be able to see the first lockers for grocery online orders, as British supermarket chain Waitrose is planning to introduce temperature controlled lockers for online Click & Collect orders. If successful, we might see other grocery retailers start to adapt this solution.

Smart Lockers

The adoption of lockers is also a growing trend in AsiaPac, to solve the last mile problem particularly for individual cities with large and diversified populations. In Beijing, the 'Parcel Cube' service has been provided in office sub-markets, residential districts and universities. It is essentially a self-serve automation arrangement where users can store and pick up their products in cabinets through the identification of specific passcodes.

Smart, Urban Warehouses

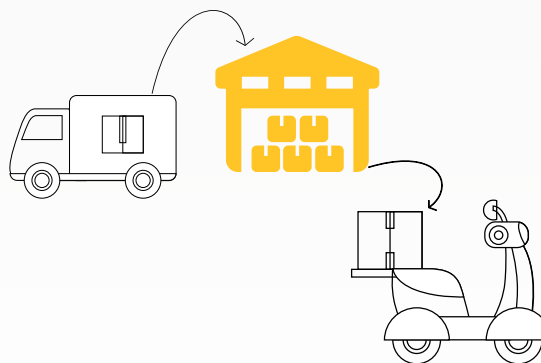
Smart, Urban Warehouses are also growing across mature and more evolving markets. In Vietnam, urban warehouses are becoming an integral part of the last-mile delivery, with new smaller facilities (than the average traditional set up) being planned closer to key urban locations. It is Colliers understanding that these warehousing facilities will be more sophisticated and tailored made to specific occupiers.

Fig. 23: Smart Lockers



Source: Parcelcube.cn, Colliers International

Fig. 24: Smart City with Urban Warehouses



Source: Colliers International

AsiaPac Case Studies:

In order to provide more insight into how specific retailers are managing their last mile logistics, we have summarized the key findings from each of the three case studies undertaken. These summaries highlight how retailers continue to create innovative solutions to better manage the 'last mile' process in response to the ever-evolving e-retailing world.

A Logistics Operator

In order to let consumers enjoy next day or even same day delivery, the logistics operator has been running sizeable distribution centers in China. They are generally looking for sites with 1.6 - 2.1 million sq ft but the minimum requirement for a distribution center is 646,000 sq ft. The operator has partnered with local convenient store chains so that there are sufficient collection points for shoppers to pick up their online purchases.

A Fashion Retailer

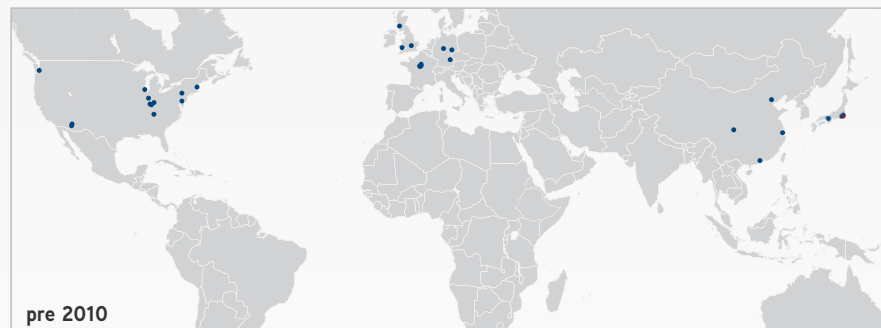
The retailer mentioned the importance of providing collection points for online purchasers at their designated stores. The key reason is that the pick up at physical store can allow customers to exchange or return goods immediately upon collection if the product is not up to their expectations (e.g. size and color). Their firsthand experience is that 'click & collect' at shops not only facilitates more online sales but also draws additional footfall and subsequent sales in their physical stores. In addition, a number of cargo vans have been used to ensure efficient delivery from one shop to the other when a requested product just happened to be out of stock in one shop but available in another.

A Supermarket Chain

The supermarket chain currently offering more than 11,000 product lines has been providing free delivery to their customers for orders over US\$65 each. Their delivery service has been outsourced to a third party courier company. Since a real time inventory status and efficient pick up has been crucial for the supply management to gauge how much inventory to keep and replenish, the chain has planned to introduce an e-commerce system to cater for the growing needs of e-commerce business. A whole floor in one of its distribution centers will be converted into a logistics center, thus expanding the total product lines to 25,000.

Case Study: Amazon

Fig. 25: Amazon Warehouse Expansion



Source: Amazon.com, Colliers International

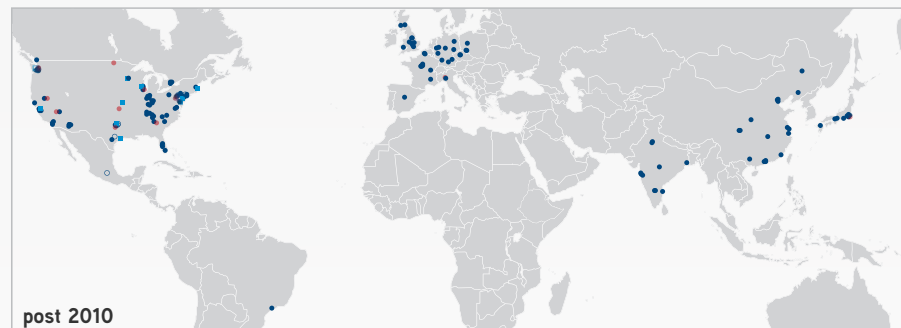
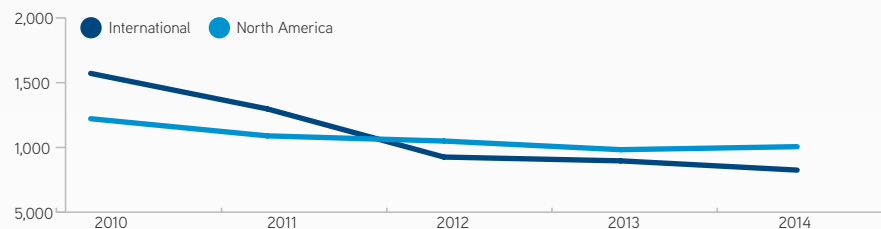
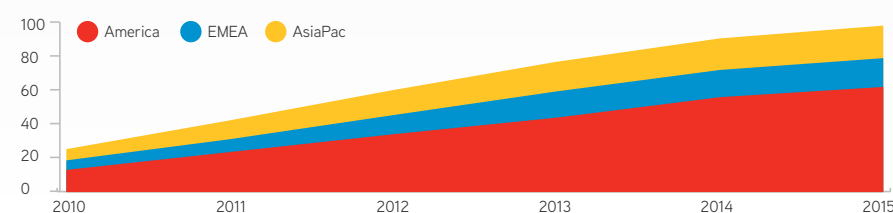


Fig. 26: Sales per sq ft [US\$]



Source: Amazon.com, Colliers International

Fig. 27: Warehouse Space [Million sq ft]



Source: Amazon.com, Colliers International

Amazon is the most widely distributed E-retailer, globally, and continues to increase its footprint across a range of established and evolving markets. With net turnover in 2014 of US\$89 billion, it is big, but the US remains the main market. International sales constitute only 37% of sales, of which Germany, the UK and Japan generate 84% of turnover.

The company founded by Jeff Bezos went online in 1995 as Amazon.com. By 1998 it started its international expansion through the launch of Amazon.co.uk and Amazon.de and the opening of the first European Fulfillment Centers (Regensburg, Germany and Marston Gate, UK).

In terms of size, the company has adopted a market share policy to expand geographically through the establishment of large distribution centers (DCs), and take first mover advantage over an increasingly competitive field. While this has impacted company margins, as sales per sqm/sq ft have diminished in both the North American and International markets, it has been generating significant improvements on the technological side.

The growth of Amazon Web Services (AWS) is now profit generating, and the biggest source of profit growth, representing almost 10% of the firm's turnover. This is helping the company to evolve its entire service offering, including the roll-out of Prime Now same-day delivery in major US cities.

In order to support its growing fashion business in Europe, Amazon opened a 46,000 sq ft (4,274 sqm) fashion photography studio in July 2015 in Shoreditch, East London. In February 2015, Amazon opened its first physical 'Amazon Student' store at the Purdue University campus in West Lafayette, Indiana. It is a customer order pickup and drop-off location.

We have seen an impressive acceleration in the launching of new services and products, as well as an increase in Amazon's physical footprint. This will undoubtedly continue across all markets in which it has a presence, not only through opening of new DCs and offices, but also through alternative last mile, quasi-retail solutions.

Case Studies: Online Grocery

Fig. 28: Ocado UK



Source: Ocado, Colliers International

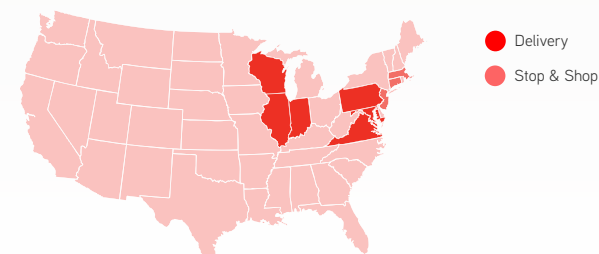
Ocado | Business & Operating Model

- › Ocado is a British grocery online store founded in 2000, based in Hatfield, Hertfordshire. It has been listed on the FTSE 250 index of the London Stock Exchange since 2010. In the financial year 2014 the retailer reported annual pre-tax profit for the first time since launching in 2000.
- › The company has a warehouse-based model, operating online without any brick & mortar retail stores. It operates on a multi-hub and spoke basis; All goods are stored and picked in fulfillment centers (the hubs) and then delivered from the hubs to local catchment customers and/or to access centers, from where local delivery takes place.
- › Ocado has been also expanding its distribution base significantly in line with the growth of the company. Currently the retailer has two food distribution centers, one non-food distribution center and 15 'local access centers'. In 2014, it opened new 'access centers' in Ruislip, Enfield, Sheffield, Knowsley and Dagenham. In 2015, a new access center in Park Royal (London) replaced a smaller one in White City and a delivery hub in Stockley Close (London) is to be opened in October.
- › In addition to these access centers, the online delivery model includes click and collect at 17 London transport hubs, and at the Galleria shopping mall in Hatfield. The company is to open two new distribution centers: One in Andover, South England in 2016 and another in Erith, south east London. Having invested heavily in the expansion of their distribution network in recent years, a slowdown in the expansion of Ocado's distribution space is expected, once the two new facilities in Andover and Erith are completed. The whole supply chain is managed and carried out by Ocado, using their own vehicle fleet.
- › The centralized model enables the retailer to carry low inventory levels, and reach customers across an increasingly wide geographic area. Fully automated warehouses allow the retailer to maintain relatively low operating costs and high efficiency. Efficiency in the fulfillment centers reached 145 units per hour in 2014.
- › The retailer currently offers 43,000 products from a wide range of suppliers, including Waitrose and Ocado-branded products.
- › Ocado uses proprietary knowledge and technology solutions, and has developed an entire end-to-end platform for operating grocery retail online. It utilizes its own technology and platform to operate the online business of Morrisons.
- › Apart from growing its own online grocery business, the company intends to partner with other retailers in order to provide them with an operating and infrastructure platform (Ocado Smart Platform) helping them to quickly launch, build and expand an online business.
- › Their agreement with Morrisons was the first contract of this type and Ocado believes there are significant opportunities to use their know-how to power multiple online retail businesses internationally. Ocado's management expects to sign up another retailer in the UK financial year 2015. The new partner is likely to come from Western Europe or North America.

Peapod | Business & Operating Model

- › Peapod is an online grocery delivery service. Since 2001 it is fully owned by Royal Ahold. Currently it provides grocery deliveries from two of Ahold's main American chains: Stop & Shop and Giant Food. Peapod offers over 8,000 products in 24 regions throughout the Midwest and the East Coast. It has 1,800 employees across the country and is currently based out of Skokie, IL. In 2013, the company generated over US\$550 million in revenue, according to industry estimates.
- › Peapod operates a flexible distribution model with three different warehouse formats, depending on a local market size and density. The formats are: small (8-10,000 sq ft) warerooms, usually attached to a store; larger so called XL shop centers (40-50,000 sq ft); and semi-automated large warehouses (150-300,000 sq ft).
- › In total, the company has three semi-automated warehouses in Lake Zurich, Illinois, Jersey City, New Jersey and Hanover, Maryland; one XL center in Massachusetts and one under construction in Indianapolis, and 20 warerooms across the East Coast.
- › Peapod offers 12,000 products in a range of categories, such as food, office and school supplies, health and beauty products, alcohol, including private labels from Stop & Shop and Giant. The company continues to grow, including new locations into its network and launching new services.
- › In 2011, Peapod launched virtual grocery stores and a year later it rolled out virtual stores at commuter rail stations in Boston, Connecticut, New York, New Jersey, Philadelphia, Washington D.C. and Chicago. Commuters can use their mobile phone to scan a QR code on the billboards to download a free Peapod Mobile app and start shopping on the spot by scanning bar codes of the products displayed in the virtual aisles.
- › In 2012, the first pick up locations were opened. In 2014, the company opened 89 new pick-up points, bringing the total number to 209. The company also opened a new distribution center in the New Jersey area and it continues to expand.

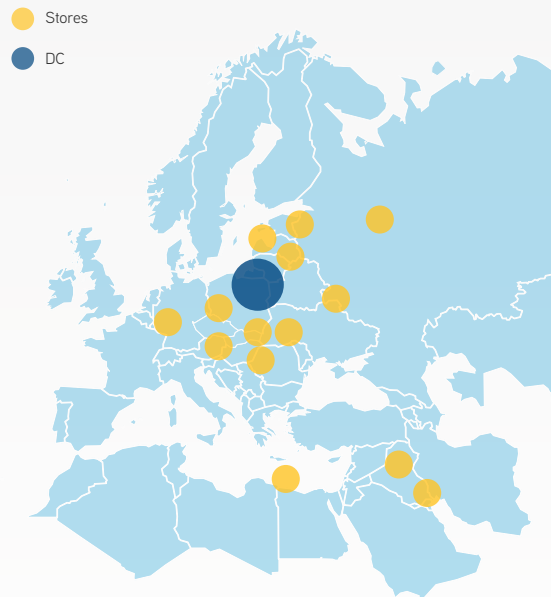
Fig. 29: Peapod Market Presence US



Source: Peapod, Colliers International

Case Study - LPP, Europe

Fig. 30: LPP Store & DC Locations



Source: LPP, Colliers International

LPP | Business & Operating Model

- › LPP, which owns five brands (RESERVED, Cropp, MOHITO, House and SINSAY), is one of the largest fashion retail groups in CEE (Central and Eastern Europe). It has nearly 1,520 stores in 13 countries and ca. 15,000 employees. Poland, where the company is based, is the largest market with 61.6% of stores.
- › Total net profit in 2014 was US\$143 million (€115 million) (11% y-o-y increase). LPP's shares have been listed on the Warsaw stock exchange since 2001.
- › Poland is the largest market for LPP in terms of both the number of stores and revenue. RESERVED remains the top LPP brand in Poland, as well as the primary choice for international expansion, especially in Russia, Ukraine, Czech Republic and Slovakia. Since 2014, Reserved has been present in Germany, representing their first foray into Western Europe). The youngest LPP brand is SINSAY, which has been present in Poland and CEE since 2013.
- › Distribution is highly centralized, with one 828,820 sq ft multi-purpose DC acting as the single distribution center for Europe. This DC currently supplies 400 stores and is under extension and modernisation to be able to supply all 1,300 (non-Russian) pan-European stores. This will equate to the delivery of approximately 1.2 million goods every day. The same distribution center also supports online sales, and is run by LPP. In Russia, their logistics operation is outsourced to the Major Logistic Company.
- › Currently LPP is concentrated on new prime retail locations and the enlargement/refurbishment of old stores. The company is in the process of renegotiating lease conditions for their portfolio in Poland, in order to decrease leasing costs. The Russia-Ukraine crisis has had a negative influence on LPP operations and revenues. Thus the company is looking for new directions for expansion, particularly in the Middle East.

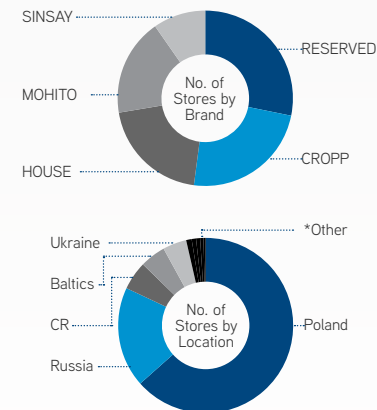
Online Model

- › Online shopping operations started in Poland in 2013, with the launch of the RESERVED online store. All LPP brands in Poland now have online stores, and as of 2015 Reserved online opened in the Czech Republic and Slovakia.
- › LPP use the Magento platform for online operations. The e-commerce business for all brands is led by one team. LPP is also introducing an omni-channel strategy including click & collect, PayU, purchase and return in store options. New e-commerce solutions will also include 'look book' and beacons in outlet centers from 2015.
- › Delivery times differ depending on the market and brand and can reach ca. 2-5 days for home deliveries. In most cases delivery is chargeable, but it can be in some cases. The company cooperates with two main social media platforms: Pinterest and Weheartit.

What's Next for the Retailer?

1. Product: New brand for women aged 40+
2. Markets:
 - › Further expansion in the Middle East (Saudi Arabia and United Arab Emirates) and Germany
 - › Reduced/slower rate of expansion in Russia and Ukraine
3. Operations:
 - › The current share of online operations in the retailer's total turnover is expected to increase to 7-10% from 2-3% over the next 5 years
 - › Launch online operations in Germany; expand online operations in Czech Republic and Slovakia.
 - › The start of online operations of the SINSAY product line.

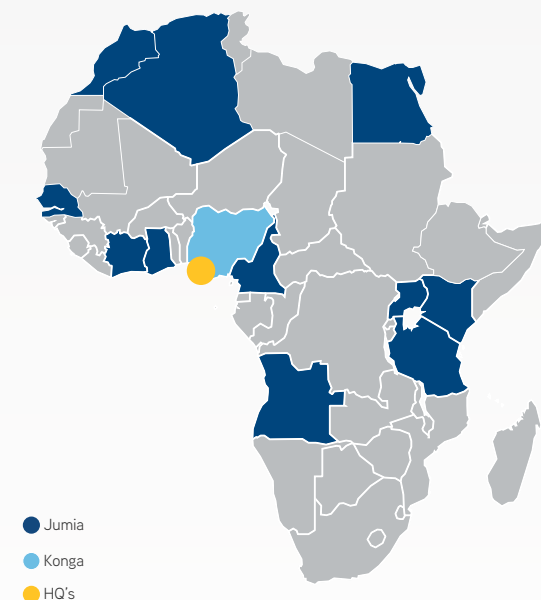
Fig. 31: LPP Store Distribution



Source: LPP, Colliers International

Case Study: E-retailing in Africa

Fig. 32: Map Africa



Source: Jumia, Konga, Colliers International

The Mobile Evolution

The digital revolution in Africa should not be underestimated. Africans use mobile phones for online activities that people in other parts of the world normally perform on laptops or desktop computers. It is a result of a relative lack of physical connectivity and access to reliable electricity. The 2014 Ericsson Mobility Report on Sub-Saharan Africa says that 70% of users in the countries it researched browse the web on mobile devices, compared with just 6% who use desktop computers. Around 43% of web browsing in Nigeria is done via mobile devices, compared to only 14% in North America. It is estimated that internet use on mobile phones in Africa will increase 20-fold between 2013 and 2019 – double the rate of growth in the rest of the world.

Chinese-brand mobile phones have been hugely successful in the continent, as Africa has become the largest Chinese smartphone market outside China. The prices of phones sold here are much lower than in the US or Europe. The increased availability of cheap cell phones and smartphones allows vast portions of the population to access mobile broadband. The fast increasing number of smartphones users will impact e-commerce market in the continent. Nigeria, the largest country on the continent, has 140 million mobile subscribers, 30% of which are estimated to own a smartphone. Jumia and Konga, the largest Nigerian online retailers, both launched their mobile apps in 2013. Jumia estimates that 70% of its Nigerian customers access its website via mobile devices. The company's CEO estimates that 85% of online purchases in Nigeria are carried out via mobile phones.

Both Jumia and Konga claim to be the largest online retailers in Nigeria. Both companies now offer same-day delivery in their primary market of Lagos, and the option of 'pick-up points' in the other cities they cover. The main issues they face are delivery reliability and times – poor physical infrastructure being one of the main obstacles. Delivery times are typically 3-7 days, and last mile delivery is based on small size vehicles – vans and scooters. In such a difficult environment, they rely on their own warehouses and delivery teams, although they also use third party providers. The relatively small size of warehouses they use reflects the limited number of products available.

Jumia has expanded to eleven other markets. Konga is operating in Nigeria only, although they have announced they were planning international expansion. The pattern of expansion in the case of Jumia saw them start in the capital city of Lagos, then gradually open hubs in other major locations. The companies have been ridiculed by many who do not believe the business can be profitable, as well as criticized for its employment policy, that is hiring inexperienced consultants with no knowledge of the African market. But, in general, a lot of positive news and expectations surround them.

Both Nigerian e-retailers provide a wide range of payment methods, including cash on delivery. These forms of payment and delivery/collection are as developed as in many other evolving markets where credit/debit card payments are still not that popular. South African companies offer more traditional methods, similar to Western European ones. They also provide same day delivery. The quality of infrastructure is clearly a key factor.

JUMIA

- Based in Lagos, Nigeria and now the largest online store in Nigeria.
- Operating also in Ghana (2014), Morocco (2012), Egypt (2012), Uganda (2014), Kenya (2013), Ivory Coast (2013), Cameroon (2014), Angola (2015), Tanzania (2014), Algeria (2015) and Senegal (2015).
- Established in 2012 (launched as Kasuwa.com), with funding from Rocket Internet and Millicom, part of Africa Internet Holding
- Deliveries are made to all 36 states in Nigeria; with delivery made in 1-5 days, on average. For the harder-to-reach areas they partner with DHL and other third-party providers
- Currently has 1,750 employees, 500 vehicles and it's own warehouses and delivery teams
- Main distribution center in Lagos is 90,000 sq ft, opened in 2013 and circa 20 delivery hubs scattered around the major cities in Nigeria.
- In other markets, the company also operates from its own warehouses using their own delivery teams as well as third party providers, such as Aramex.

KONGA

- Based in Yaba, Lagos - Nigeria.
- Launched in 2012, with funding from Investment AB Kinnevik and Naspers.
- The retailer set up KExpress in 2014, its private logistics company, in a bid to enhance delivery.
- In 2015, a deal was signed between Konga.com and the Nigeria Postal Service (NIPOST) allowing Konga leverage NIPOST post offices and pick-up centers in order to expedite deliveries.
- Konga's Lagos warehouses hold most of its inventories. They also have other two sorting centers in Abuja and Port Harcourt, where consumer goods are sent. Those serve as regional storehouses. Konga recently moved to a new 120,000 square-foot fulfillment center (Lagos).
- In Nov 2014 they opened a new engineering center in Yaba, Lagos, necessitated by the growth of its software development team. Konga said it now employs over 100 software engineers in its Lagos office, tasked with working on the Konga.com website and creating innovative features for the platform. They state they have over 1,000 employees in total.
- The startup also announced the opening of a secondary engineering center in Cape Town, South Africa, with plans to establishment a knowledge exchange program between the two hubs, and one engineering center in China.

First Mile – Last Mile Summary

How Will the Market Shape Up?

The modern logistics and retail markets are developing and evolving at a very fast rate. 'Click & Collect' innovations and urban lockers are becoming an increasing part of some consumers' daily lives, with many different forms taking hold, each often suited to the shopping and consumption culture of a city and country. JVs with hotels, as with Gap, or new 'cold-storage' lockers in supermarkets represent just how fast-moving and innovative these solutions are becoming in response to market demand.

A corresponding increasing in the demand for urban freight options is clearly on the rise. In the UK, finance for commercial vehicles on lease and hire-purchase agreements rose 10% year-on-year, to US\$10 billion (£6.5 billion) in August 2015, according to the Finance and Leasing Association, a trade body. There has been a 17% increase in the number of vans on the road over the same period. This growth has been put down to the e-retailing expansion.

The one common denominator is that they will all require servicing by an increasingly large and sophisticated logistics network. There are three types of DC which will take the dominant form in years to come: Mega-sized Regional/National DCs; Mid-sized, Cross-docked City DCs; Small, flexible urban warehouses/access centers.

Size wise, these formats fit a ratio of 100:10:1, based on examples across a variety of global markets. Looking forward, while Mega-sized DCs will continue to show a pattern of consolidation, we expect a proliferation of their Mid-sized and small cousins, as urban logistics continues to grow in scale and importance

Mega, Intermodal

- At the trading port/entry level supersized DCs which are either automated or semi-automated. In the US, these schemes are increasingly intermodal.
- Major road access is critical, as is state of the art automation and racking
- Sizes vary, but 1 million sq ft + is not unusual for the big schemes.
- 3PL partners/parcel express etc for managing distribution

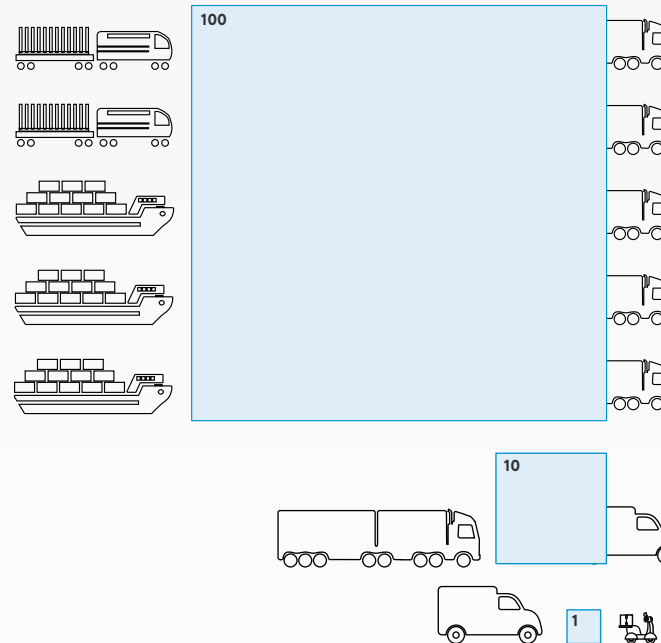
Mid-Size, Cross-docked

- More mid-sized, cross-docked facilities of around 100,000 sq ft are forming around the main arterial routes into major cities and conurbations
- Highly automated, racking systems, but built for quick transfer of goods
- Typically 10m+ clearing height min, 50-150 min loading docks
- 3PL partners/parcel express etc for managing distribution

Urban Warehouses

- Small facilities up to 10,000 sq ft
- Located in urban communities, not the CBD
- Typically hand-picked operations
- Local couriers, bike and small vehicle.
- Amazon using Uber in NYC for Prime Now

Fig. 33: The Evolution of Warehouse/Distribution Space: 100:10:1



Source: Colliers International

Fig. 34: Preferred Delivery Method, UK

Consumer

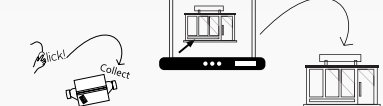
1

Delivery to a locker, or collection point



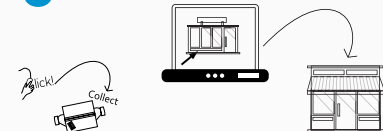
2

Delivery to the shop they ordered from by click&collect



3

Delivery to a different shop they ordered from by click&collect



Retailer

1

Own click&collect



2



Home delivery via Royal Mail

3

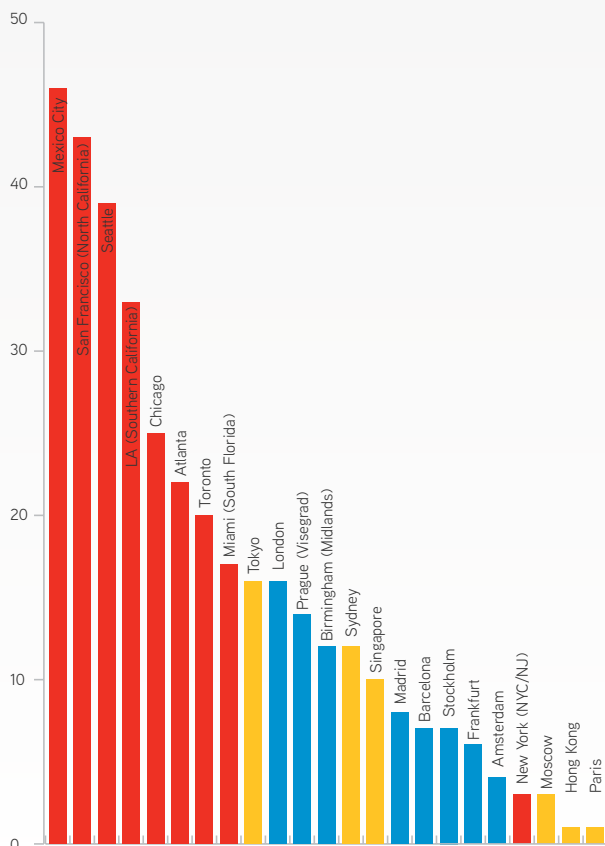
Own delivery van



Source: Barclays, Colliers International

Market Implications

Fig. 35: Prime Warehouse Rents as % of Retail Rent



Source: Colliers International

More Land Required

The key challenge for the logistics industry, when it comes to the creation of a platform of logistics facilities, is the availability and cost of land.

When it comes to large-scale DCs, it is clear that the size, scale and level of sophistication required to create cutting-edge facilities necessitates the need for large land plots, with direct connectivity to high quality transport infrastructure. A number of markets are increasingly struggling to cope with these demands so the development of new infrastructure, opening up new locations and areas with suitable large sites for large-scale cutting edge facilities is paramount. As the level of sophistication and automation rise in these facilities, the requirements for a large workforce should diminish, providing the opportunity to pick locations further outside of urban areas, provided that the transport network is in place.

At the other end of the supply chain spectrum, 'Last Mile' logistics - the movement of goods from a transportation network to a final destination - is fast becoming the most important and challenging step. Particularly with the advent of same-day delivery, this final stage of the transaction is much more complex in that it crystallizes the customer experience, given the face-to-face interaction between delivery persons/retail shop staff and customers, who are always expecting a quality service and on-time delivery. It is a challenging process because it usually involves a significant % (often more than 50%) of the total logistics cost. Therefore, the challenge is to contain the total logistics cost while maintaining a satisfactory level of delivery efficiency and customer service.

Hence the rise in urban lockers and a range of 'click and collect' solutions. These options provide an alternative to home delivery and retail outlets, or in the case of click and collect, are increasingly supportive of retail. But these facilities, alongside home delivery, require an urban logistics warehouse and delivery footprint to function.

In Hong Kong and Singapore, where land supply is limited and there is strong competition for different, higher value use - notably residential - delivering urban warehousing and alternative last mile solutions has been a major challenge. This is also fast becoming a problem for many other global cities, which continue to see their populations grow and land use increase in density.

Logistics Rents and Values to Rise

While retail will continue to maintain its vital role in facilitating the soft aspects of consumption, in order for urban logistics to work, urban logistics rents and values must start rising towards those of retail. The current discount between logistics and retail rents across the primary global markets differs markedly depending on the density of each city and the maturation of each market.

A simple comparison of the lowest quoted urban retail rent - with the highest prime warehouse rent - shows just how much markets vary. For example, in Mexico City the value of warehouse to retail rents is only around 45% i.e. prime warehouse rents are worth only 45% of the lowest quoted retail rents.

In San Francisco, the most expensive US logistics market, the difference is down to 40%. At the other end of the scale in Hong Kong, New York and Paris, the difference is far more significant - warehouse rents are worth less than three % of the lowest quoted retail rents.

We appreciate this is a 'ball-park' comparison, as the retail areas reviewed are far more central than those for which warehousing is covered. Yet for urban warehousing to grow in our global towns and cities, rents simply have to rise to support the entire omni-channel experience of a growing urban customer base, where logistics is just as important as retail. The investment community continues to demonstrate just how valuable they consider modern logistics to be, relative to retail, based on current yield/cap rate pricing.

Underutilized Offices a Target Market?

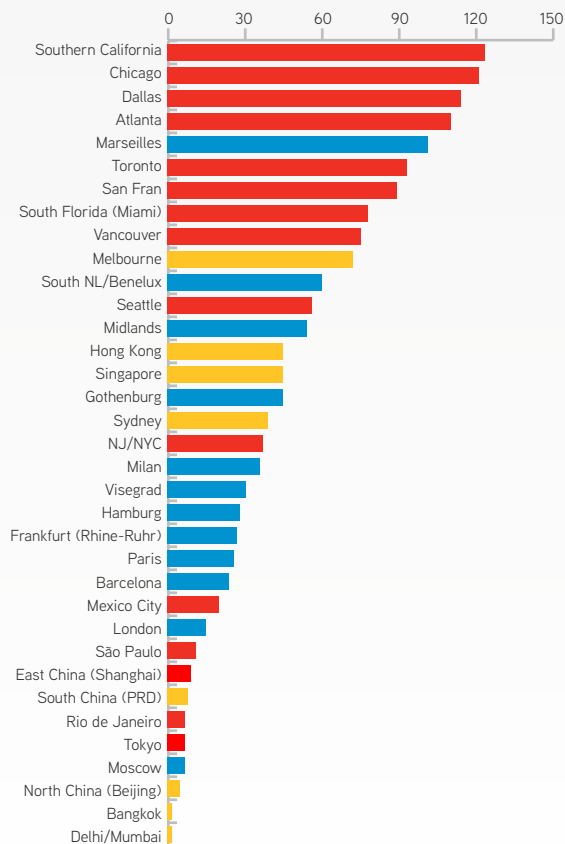
In order for urban logistics to grow, mixed-use schemes combining logistics and offices or residential, or even hotels, seem an obvious choice of combined use, to help generate higher, competing existing-use values. We have touched on some examples of these schemes, which will continue to grow across global markets. Peapod have shown great innovation in terms of their use of empty bank branch networks as pick-up/delivery locations.

Additionally, as modern workforces change, driven by increasing access to technology and a change in working styles and collaborative behavior, this is driving a far more efficient use of office space. This will continue to free up older office buildings for alternative uses, providing potential mixed-use options where urban planning allows. Combining logistics and residential is an obvious choice, given the pressure that growing urban populations will place on city residential markets.

To get an idea of how much pressure urban logistics markets are likely to witness, we have rolled out some forecast ranges for logistics space up to 2020.

Market Opportunities

Fig. 36: Warehouse Space per Household [sq ft]



Source: Colliers International

To finish, we have mapped out a broad view on just how much capacity there is for further logistics development today, and how much more modern space will be required based growth and changes in population, consumption and demand for e-retailing.

The Base Position

Before we look at the potential growth in logistics demand to 2020, it is worth considering the differences in the base position of each of the key global clusters covered in this report.

Figure 36 highlights the estimated volume of existing space per household, across each global cluster. This is based on our own analysis, and proprietary research undertaken by Prologis, determining the volume of logistics space relative to the number of households with an annual income of more than US\$20,000.

Unsurprisingly, the North American markets are the most advanced in their provision of space, followed by Europe and Australia and then the emerging markets of AsiaPac. This also shows how trade-centric locations such as Southern California have a higher proportion of modern space. **But it also shows how much latent capacity sits in many existing markets, even those in Europe, relative to North America.**

If we project growth in household consumption and population to 2020, we get an indication of the growth in consumer goods traffic per year. By using our case study analysis of a number of global retailers (where we have assessed the total amount of logistics space that supports their total sales revenue), we have been able to determine a size range for future logistics space requirements for the global primary markets we have covered. **The numbers are vast, and they are increasingly driven by the consumption of urban communities which is telling.**

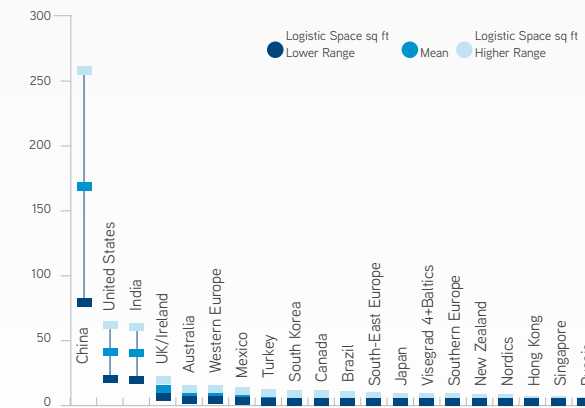
China comes out on top as by far the biggest leader of logistics demand over the next five years. If we spread the impact of the increase in demand to 2020, driven primarily by population growth, this could equate to the need for an extra 172 - 527 million sq ft per year, across the country. The lower figure is derived from traditional retailer models, which use less logistics space than their e-retailing counterparts. So if the shift to e-retailing continues, even more pressure is likely to impact on the market, and the focus will inevitably be on the key Chinese clusters in situ.

The US is the next biggest market, but followed very closely by India, where something in the range of 43 - 135 million sq ft could be required to satisfy the growth in the consumption of both fast and slow moving consumer goods (FMCG, SMCG). There is then a further drop in the size requirement for UK/Ireland and Australia, closely followed by Western Europe, Mexico and Turkey.

While existing capacity could be used for some of this growing volume of trade, this exemplifies the need for a far more efficient and sizable logistics network of space and facilities - particularly in these key urban clusters. And we'd consider our forecasts to be on the modest side, when it comes to servicing growing e-retailer needs.

Overall we're talking 1.1 trillion more parcels per year, based on current e-retailing sales (as a percentage of all retail sales) at current average order values and parcel sizes. This converts to an estimate 350 million more pallets a year between now and 2020. It's likely to be much more than this, as e-retailing continues to grow.

Fig. 37: Annual Logistic Space Requirement: 2015-2020 [Million sq ft]



Source: Colliers International

Market Position – Strategic Alliances

As the expanding volume of e-commerce translates into growing demand for more sophisticated warehousing and distribution facilities, joint ventures between retailers, freight and logistics providers, developers and institutional real estate investors is going to be one of the most interesting trends that will foster further market evolution for the foreseeable future.

More logistics specialists will arrive to compete in this space, and provide management support for supply logistics which is becoming even more complex and challenging due to stringent cost controls, the need to manage returns and customers' expectations of on-time delivery.

At present only the North American, Australian, UK, and Western European and Nordic markets are at the advanced 'Strategic Alliance' phase. All other markets – even relatively mature markets, such as Hong Kong and Japan – are yet to reach this level, as parts of their market are yet to genuinely open up to competition, particularly within the logistics, freight and parcel handling services space.

Markets such as India are still at their beginning stage in earnest, alongside locations in south-east Europe, Africa and the UAE.

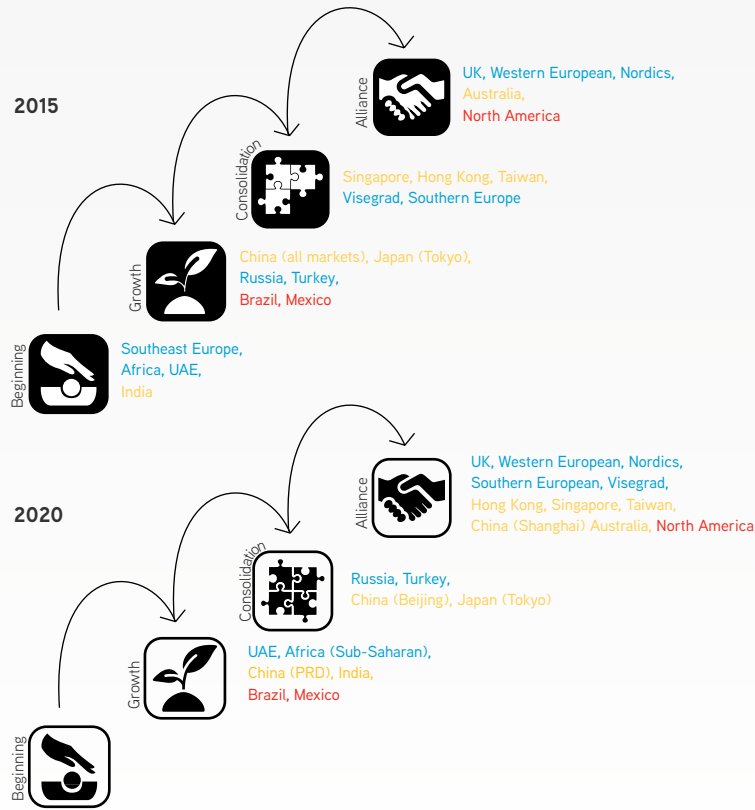
The 2020 Market Position

As these markets grow and develop, we are likely to see each location evolve, some at faster rates than others. Of the Chinese markets, it is those on the coast, notably Shanghai, most likely to reach the 'strategic alliance' phase first, alongside Taiwan, Singapore and Hong Kong. The southern European and Visegrad markets of Europe will also get to this level by 2020, markets where competition is intensifying and logistics players have been going for more service differentiation in order to secure their market share. These locations also represent the best inland intermodal hub options with which to service pan-European operations over the long-term, so alliances may evolve to include rail freight operators.

Such is the size and scale of inland China and the PRD region, alongside (Sub-Saharan) Africa, India, Mexico and Brazil, these markets are likely to remain as growth markets for another 5-10 years before they reach a consolidation phase of any sort. Russia, China and Japan (Tokyo) will most likely reach that phase first, although the rate of e-retailing growth and expansion in Brazil and Mexico means that they could see their major cluster cities reach a consolidation phase as logistics operators and retailers move in to take market share.

Irrespective of the market, the logistics arena, especially the e-retailing space, is set to create many more opportunities for owners, occupiers, operators and developers alike for a number of years to come.

Fig. 38: Market Evolution 2015 vs 2020



Source: Colliers International

There are four evolutionary positions for the logistics real estate market with reference to the pace of demand growth, the sophistication of logistics requirements (both services and space), the relative degree of competition and the various business operating models.

Stage 1 - Beginning

This is the early stage, where the logistics market has grown in response to demand but in a fragmented way, with often smaller units being built at low specifications, by many small owner operators (1&2PLs). There is limited competition from specialized developers and institutional investors.

Stage 2 - Growth

This stage sees the introduction of more demand-side competition from local and international logistics providers. As the market continues to evolve and both logistics and space needs become more sophisticated, the key changes include service differentiation and deepening segmentation. More sizeable operators are there to compete on service quality.

Stage 3 - Consolidation

This the typical consolidation phase when the market growth is outpaced by intensifying degree of competition

Stage 4 - Strategic Alliance

Market players start adopting alternative business models to get around the issue of over concentration, but also to meet higher consumer expectations. New strategic alliances between service providers emerge.

502 offices in
67 countries on
6 continents

United States: **140**
Canada: **31**
Latin America: **24**
Asia Pacific: **199**
EMEA: **108**

\$2.3
billion in
annual revenue

1.7
billion square feet
under management

16,300
professionals
and staff

PRIMARY AUTHOR:

Damian Harrington
Director | Head of EMEA Research
+358 9 856 77 600
damian.harrington@colliers.com

KEY CONTRIBUTORS:

EMEA

Juliane Priesemeister, Information Designer | EMEA Research
juliane.priesemeister@colliers.com

Neil Crook, Consultant | EMEA Research
neil.crook@colliers.com

Zuzanna Baranowska, Retail Analyst | EMEA Research
zuzanna.baranowska@colliers.com

AsiaPac

Simon Lo, Executive Director, Research and Advisory | Asia
simon.lo@colliers.com

Nerida Conisbee, National Director, Research | Australia
nerida.conisbee@colliers.com

Americas

Pete Culliney, Director of Research | Global/USA
pete.culliney@colliers.com

Craig Hennigar CFA, AACI, MBA, MA(Econ), Director, Market Intelligence | Canada
craig.hennigar@colliers.com



Accelerating success.

BUSINESS CONTACTS:

Dwight Hotchkiss, President of Brokerage Services & National Director of Industrial for Colliers | U.S.
dwight.hotchkiss@colliers.com
Dir +1 213 532 3229 | Mob +1 213 248 7622

Tammy Tang, Executive Director of Industrial Services | China
tammy.tang@colliers.com
Dir +86 21 6141 3625 | Mob +86 159 0077 3610

Malcom Tyson, Managing Director of Industrial Division | Australia
malcom.tyson@colliers.com
Dir +61 2 9257 0271 | Mob +61 412 248 883

Tim Davies, Managing Director, Head Industrial & Logistics Practice Group for Colliers | EMEA
tim.davies@colliers.com
Dir +44 117 917 2048 | Mob +44 7714 707676

About Colliers International Group Inc.

Colliers International Group Inc. (NASDAQ: CIG; TSX: CIG) is a global leader in commercial real estate services with more than 16,300 professionals operating from 502 offices in 67 countries. With an enterprising culture and significant insider ownership, Colliers professionals provide a full range of services to real estate occupiers, owners and investors worldwide. Services include brokerage, global corporate solutions, investment sales and capital markets, project management and workplace solutions, property and asset management, consulting, valuation and appraisal services, and customized research and thought leadership. Colliers International has been ranked among the top 100 outsourcing firms by the International Association of Outsourcing Professionals' Global Outsourcing for 10 consecutive years, more than any other real estate services firm.

colliers.com



colliers.com

Copyright © 2015 Colliers International.

The information contained herein has been obtained from sources deemed reliable. While every reasonable effort has been made to ensure its accuracy, we cannot guarantee it. No responsibility is assumed for any inaccuracies. Readers are encouraged to consult their professional advisors prior to acting on any of the material contained in this report.