



CTBUH Research Paper

ctbuh.org/papers

Title: **2017: Skyscraper History's Tallest, Highest- Volume, and Most Geographically Diverse Year**

Authors:

Subjects: Architectural/Design
Building Case Study

Publication Date: 2018

Original Publication: CTBUH Journal 2018 Issue I

Paper Type:

1. Book chapter/Part chapter
2. **Journal paper**
3. Conference proceeding
4. Unpublished conference paper
5. Magazine article
6. Unpublished

© Council on Tall Buildings and Urban Habitat /

2017: Skyscraper History's Tallest, Highest-Volume, and Most Geographically Diverse Year

Abstract

This 2017 Tall Building Year in Review / Tall Buildings in Numbers data analysis report shows that more buildings of 200 meters' height or greater were completed in 2017 than in any other year, with a total of 144 completions. Notably, 2017 was also the most geographically diverse year in terms of the number of cities and countries that completed 200-meter-plus buildings, with 69 cities across 23 countries represented in the data, up from 54 cities across 18 countries in 2016. The report covers other statistical highlights of 2017 and predicts completions for 2018.

Note: Please refer to *Tall Buildings in Numbers – The Global Tall Building Picture: Impact of 2017* in conjunction with this paper, pages 52–53

Keywords: 2017, Completions, Height, Statistics, Skyscrapers, Urbanization

More buildings of 200 meters' height or greater were completed in 2017 than in any other year, with a total of 144 completions, marking the fourth consecutive record-breaking year (see Figure 2). This is an increase of 95% from 2013, when only 74 buildings of 200 meters or more were completed. The total number of 200-meter buildings in the world is now 1,319, an increase of 12.3% from 2016, and a 402% increase from 2000, when only 263 existed. The total sum of heights – that is, if the heights of all completions in 2017 were

added together – was 35,145 meters, making 2017 the “tallest year ever.”

Notably, 2017 was also the most geographically diverse year in terms of the number of cities and countries that completed 200-meter-plus buildings, with 69 cities across 23 countries represented in the data, up from 54 cities across 18 countries in 2016. High-rise construction is no longer confined to a select few financial and business centers, but rather is becoming the accepted global model for

densification, as more than one million people on our planet urbanize each week. Thirteen cities saw their first 200-meter-plus high-rise completion in 2017, in addition to the 28 cities and eight countries that saw their tallest building completed this year.

Once again, for the 10th time in a row, China completed the greatest number of 200-meter-plus buildings in 2017 (see Figure 3), with 76 completions for 53% of the total. Although this is a slight decrease from 2016, when China completed 83 such buildings,

Figure 1. Tallest in 2017: Ping An Finance Center, Shenzhen, 599 meters. © Tim Griffith for KPF



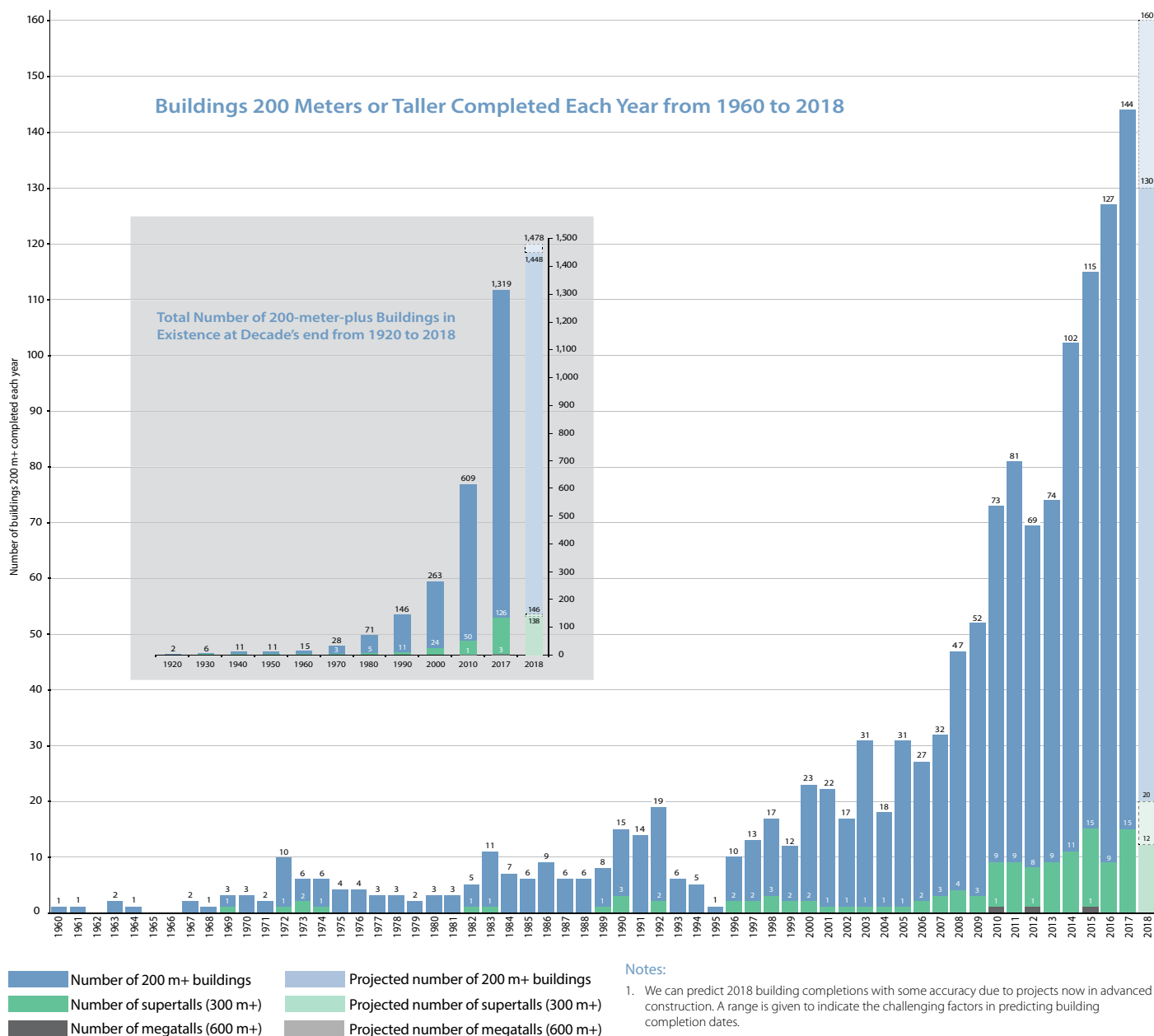


Figure 2. Number of 200-meter-plus buildings completed each year from 1960 to 2017, with projections through 2018.

or 65% of the global total, China is still by far the world leader in skyscraper construction. In fact, the city with the most 200-meter-plus building completions, Shenzhen, China, finished 12 buildings, or 8.3% of the year's global total, and more than any other country on the list, except China (see Figures 3 and 4). This is the second year that Shenzhen was the city with the most 200-meter-plus completions in the world. It's the third year in a row in which the tallest building to complete in that year is in China. That building, Ping An Finance Center, also happens to be in Shenzhen (see Figure 1). The United States completed the second-greatest number of 200-meter-plus

buildings of any country, with 10 buildings finished in 2017.

Key Worldwide Market Snapshots of 2017

Asia (Not including Middle East)

While 2017 may have been the most geographically diverse year for 200-meter-plus building completions, Asia retained its status as the world's skyscraper epicenter, completing 109 buildings of at least 200 meters in height, representing 76% of the total. This marks a small decline from the 83% share it held in 2016, and is in line with China's slight decline in total completion

share (see Figure 6 and 11). The top two cities, Shenzhen and Nanning, are in China, with Jakarta, Indonesia and Chengdu, China, tied for third place with five completions each (see Figure 4).

Surprisingly, Pyongyang, North Korea, tied for sixth place with four buildings of 200 meters or greater completed in 2017, after having completed no buildings over 200 meters in 2016.

Seoul, South Korea completed three 200-meter-plus buildings, including Lotte World Tower, a 555-meter mixed-use building – the city's first "supertall", or

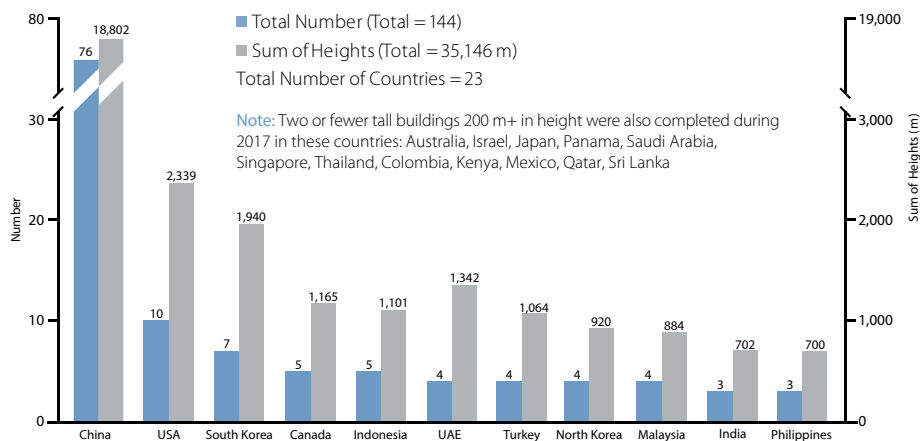


Figure 3. Buildings 200 meters or taller completed in 2017 by country.

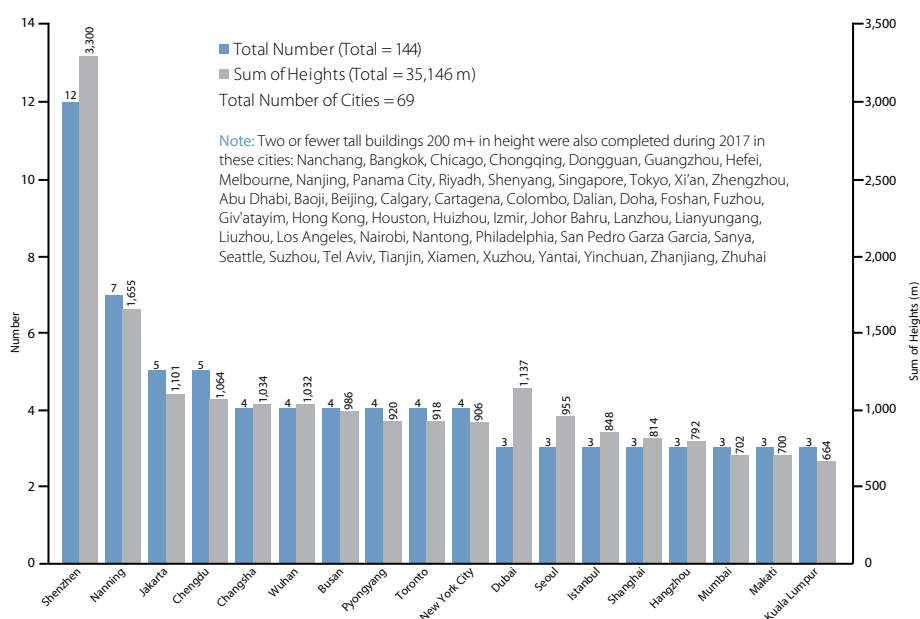


Figure 4. Buildings 200 meters or taller completed in 2017 by city.



Figure 5. Second-Tallest in 2017: Lotte World Tower, Seoul, 555 meters. © Tim Griffith for KPF

building of 300 meters or higher (see Case Study, page 12 and Figure 5).

Mumbai completed its new tallest building (as well as India's), One Avighna Park, at 266 meters. Two other 200-meter-plus buildings completed in the coastal city in 2017.

Sri Lanka also completed its new tallest building, the Grand Hyatt Colombo, which rises to 230 meters.

Middle East and Africa

The Middle East had nine completions in 2017, representing 6.3% of the global total, down from 10 completions in 2016 (see Figure 6). Dubai saw three completions in 2017, and all were supertall – the tallest of which, Marina 101, now holds the title of 18th tallest building in the world at 425 meters (see Figure 7). Dubai also completed the third, fourth, and fifth-tallest buildings of the year. A fourth building in Abu Dhabi brings the United Arab Emirates' total to four. Israel and Saudi Arabia tied with two 200-meter-plus completions, with Qatar marking one.

Africa completed its second 200-meter-plus building, Britam Tower, which is both Kenya's and its capital Nairobi's first (see Figure 8). Due to rapid population growth, we expect to see more completions in Africa in the coming years.

North America (includes Central America)

North America more than doubled its 2016 record with 15 tall building completions in 2017, for a global share of 10.4% (see Figure 6). This was reflected both in the United States, which saw 10 completions in 2017, and Canada, which completed five buildings of 200 meters or greater height. Toronto alone notably represented 80% of Canada's tall building completions this year, as the city experiences an ongoing boom in high-rise construction. While not yet completed, Toronto's first supertall – named The One – broke ground in late 2017. Toronto rose significantly in this year's rankings compared to 2016, with four completions, up from zero.

Yearly 200-meter-plus Tall Building Completions, By Region/Country

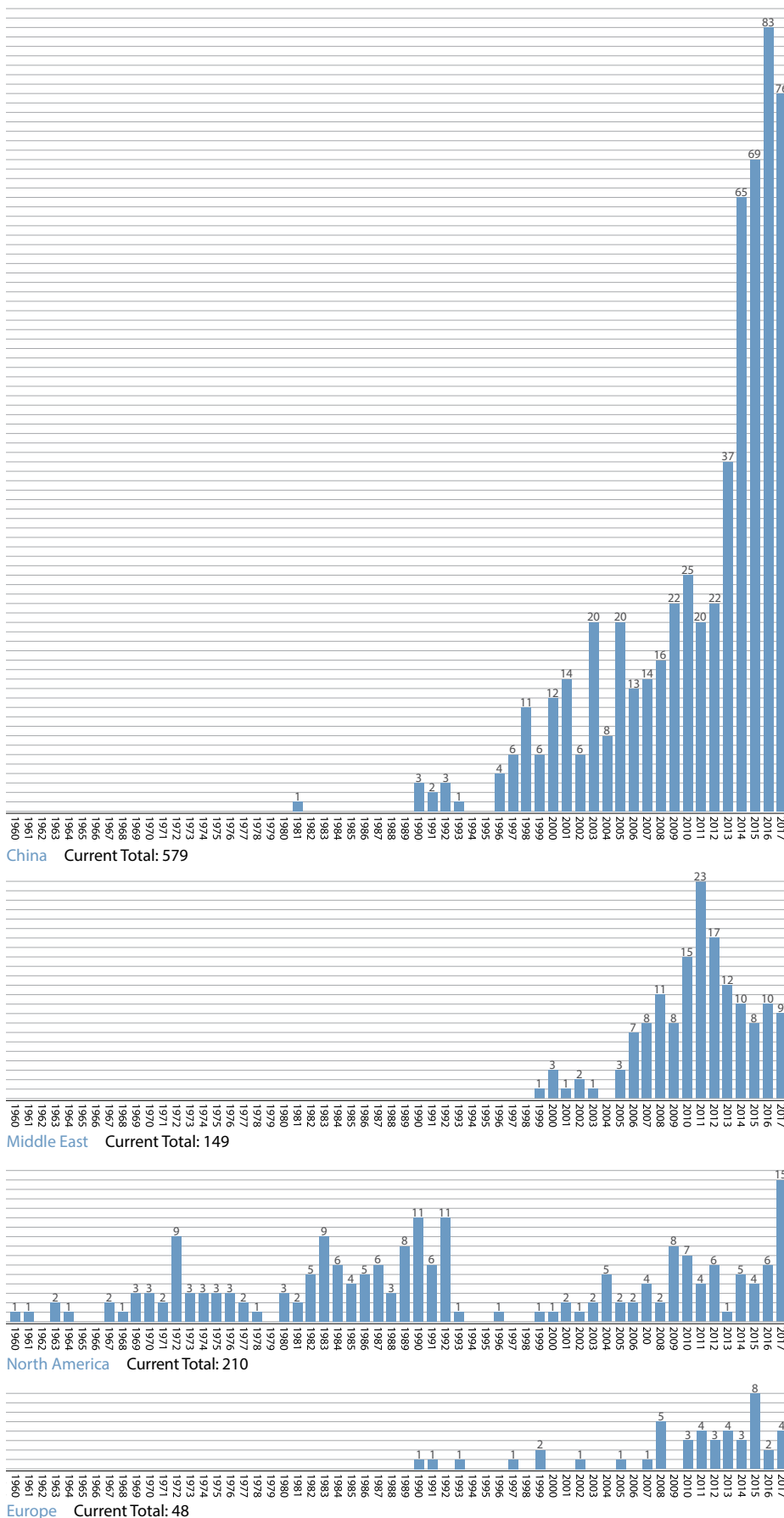


Figure 6. Number of 200-meter-plus tall buildings completed by region/country since 1960.

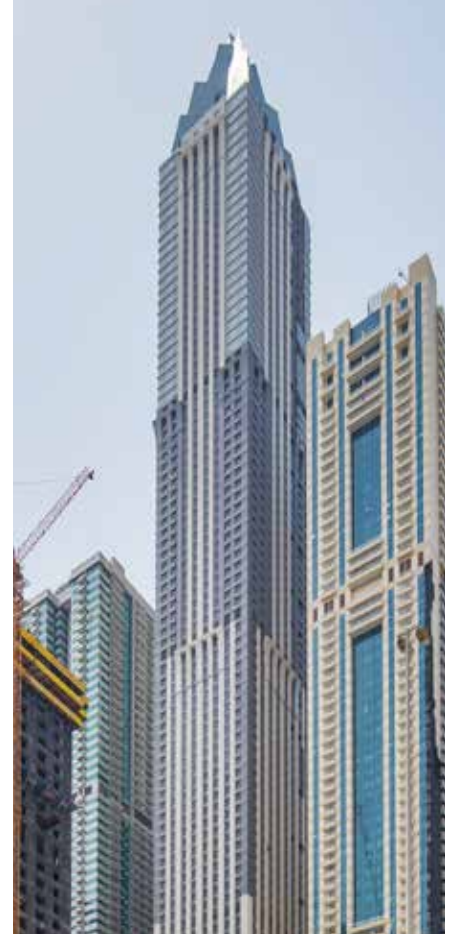


Figure 7. Third-Tallest in 2017: Marina 101, Dubai, 425 meters. © Lester Ali

In the United States, New York completed four 200-meter-plus buildings, while two completed in Chicago. Los Angeles completed one building of 200-plus-meters, the Wilshire Grand Center (see Figure 9), which is now the city's tallest at 335 meters.

Mexico completed its tallest building, Torre KOI, a 279-meter mixed-use tower in San Pedro Garza Garcia, just south of Monterrey (see Figure 10). This marks the second year in a row that Mexico has crowned a new tallest building. Meanwhile, Panama City added two completions to its disproportionately large collection of high-rises, about 65% of which are residential.

South America

Only one tall building of 200 meters or greater completed in 2017 in South America – the Hotel Estelar Bocagrande in Cartagena, Colombia, at 202 meters. This is an increase for the continent, however, which had no such completions in 2016.

Europe

Europe doubled its 2016 output with four buildings of at least 200 meters in height, all of which were in Turkey – three in Istanbul and one in Izmir (see Figure 6). This is big



Figure 8. 135th-Tallest in 2017: Britam Tower, Nairobi, 200 meters. © Johan Smith



Figure 9. Sixth-Tallest in 2017: Wilshire Grand Center, Los Angeles, 335 meters. © AC Martin

news for Turkey, which had zero such completions in 2016. Skyland Towers, at 284 meters, became Istanbul's tallest and Europe's seventh-tallest buildings.

Australia and Oceania

Two tall buildings of 200 meters or greater completed in this region in 2017, down from three in 2016. Both were in Melbourne, Australia, and both were residential. As was emphasized during the 2017 CTBUH Conference (see Journal 2017, Issue IV), Australia is amidst a building boom and is rapidly becoming one of the world's most urbanized nations.

Completions by Function

The functional share of tall buildings in 2017 proved to be among the most interesting discoveries in the study, as the



Figure 10. 27th-Tallest in 2017: Torre KOI, San Pedro Garza Garcia, 279 meters. © IDEI

data showed a large shift from all-office and mixed-use function to all-residential towers (see Figure 12). Buildings with all-residential functions spiked to 49 completions, or 34% of the total, up from just 19, or 15% of the total last year. At the same time, all-office building completions fell to 56, or 39% of the total, compared to 67, or 52% of completions in 2016. Of all the pure-office buildings completed, 44, or 78.6%, were in China.

Completions by Material

Of the 144 buildings of 200 meters or greater height completed in 2017, 74, or 51%, used concrete as the main structural material; while 64, or 44%, used a composite of steel and concrete (see Figure 13). The significant use of concrete can be attributed to a combination of concrete's relative ubiquity and lower cost in many regions, as well as its comparative simplicity in construction, which would increase its appeal in regions with lower-skilled labor pools.

In 2017, two buildings had all-steel construction, consistent with the 2016 figure. As of this writing, there were only seventeen 200-meter-plus buildings currently under construction that employed all-steel structural systems.

Average Height

The average height of 200-meter-plus buildings completed in 2017 was 244 meters, up from 238 meters in 2016. The average height of the World's 100 Tallest Buildings continues to climb, hitting 372 meters in 2017, up from 363 meters in 2016. Meanwhile, the average height of the 20 tallest 200 meter-plus completions in 2017 has hit a new record high of 348 meters, up from 316 meters in 2016.

"Supertall" Completions

A total of 15 supertalls (buildings of 300 meters or higher) were completed in 2017, tying with 2015, the first year to break this record. The total number of supertall buildings worldwide is now 126, up from 111 in 2016. This fact is even more extraordinary, considering that much of the activity has been in the past few years. The 2017 figure represents a 66% increase in just four years. In 2013, there were 76 buildings 300 meters or higher; in 2000, only 26.

The World's 100 Tallest Buildings: Impact of 2017 (refer to pages 52–53)

The geographical profile of the World's 100 Tallest Buildings did not sustain as much change over the past year as that of the overall 200-meter-plus population. Of the 100 World's Tallest Buildings, 54 were in Asia, a figure unchanged from 2016. Twenty-six were in the Middle East, up from 24 the previous year. North America has 15 of the buildings on the list. Europe's figure dropped from five in 2016 to four in 2017.

Mixed-use continues to dominate the functional mix of the tallest 100 buildings, with 46 buildings, an increase from 41 in 2016. Meanwhile, office functions take a slightly lower share in 2017, with 38 buildings, down from 40 in 2016 and equal to the 2015 figure. Residential and hotel functions have shrunk as a proportion once again, with 11 and five buildings, respectively, down from 12 and seven in 2016.

As in previous recent years, composite construction, in which a combination of steel and concrete components is used in

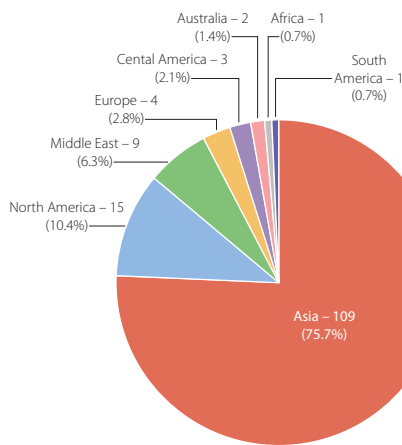


Figure 11. Buildings 200 meters or taller completed in 2017 by region.

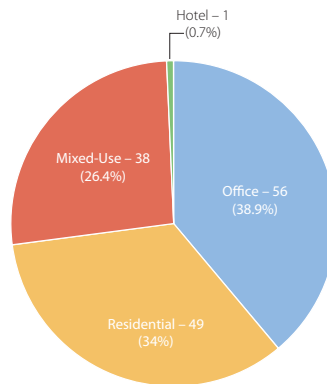


Figure 12. Buildings 200 meters or taller completed in 2017 by function.

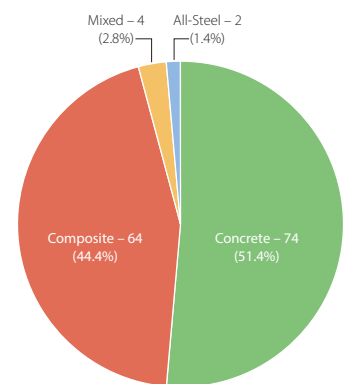


Figure 13. Buildings 200 meters or taller completed in 2017 by structural material.



Figure 14. **59th-Tallest in 2017:** 50 West, New York City, 237 meters. © Lester Ali



Figure 15. **35th-Tallest in 2017:** Raffles City Hangzhou Tower 1, Hangzhou, 256 meters. © Hufton Crow

the main structural elements, represents the majority of structural approaches to the 100 Tallest list, with 51 of the buildings being of composite construction, the same as in 2016. All-concrete buildings decreased by one to 34 from 35 in 2016. The number of all-steel buildings in the 100 Tallest list remains at 10 in 2017, as it was in 2016. Those buildings reported as being of “mixed” construction, in which distinct sections of the buildings are predominantly steel or concrete, increased to five in 2017, from four in 2016.

Two new additions also joined to the list of the World’s 10 Tallest Buildings in 2017 – the fourth and fifth tallest, Ping An Finance Center in Shenzhen (see Figure 1) and Lotte World Tower in Seoul (see Figure 5), respectively. Ping An Finance Center rises 599 meters, while Lotte World Tower reaches a

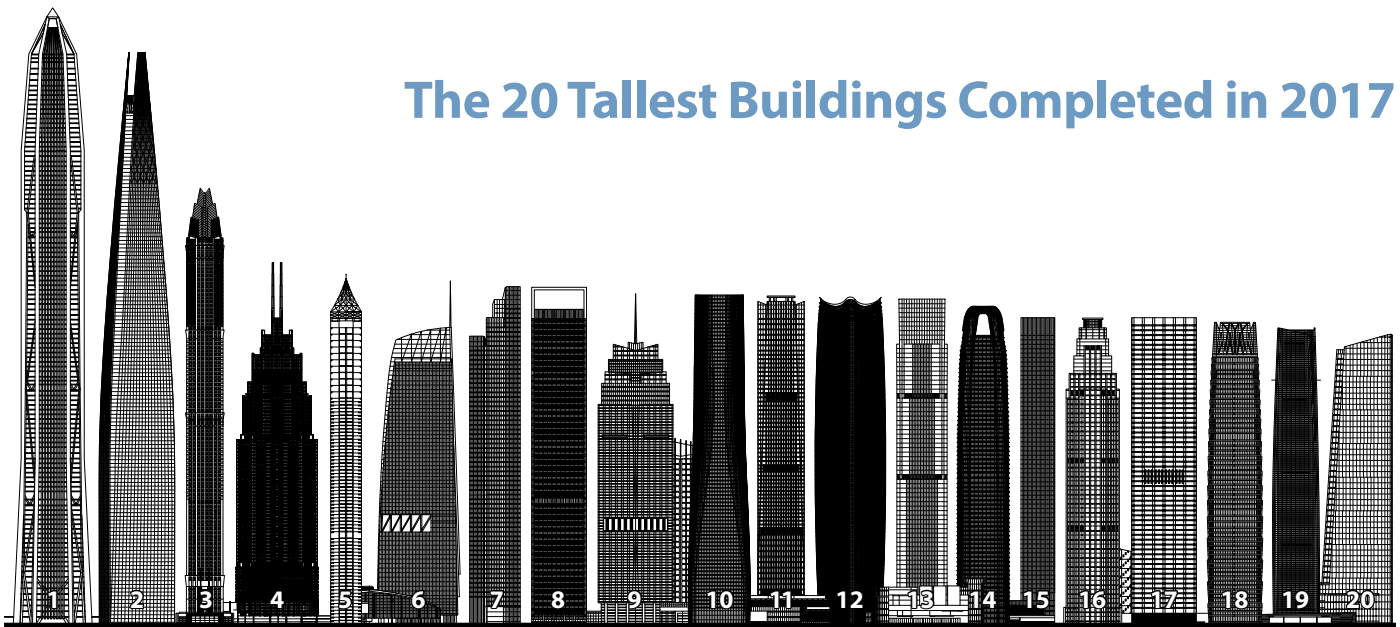
pinnacle of 555 meters. The completion of these two towers resulted in Petronas Twin Towers, Kuala Lumpur, being removed from the World’s 10 Tallest Buildings list. This is especially significant, given that upon completion in 1998, the CTBUH certified the Petronas Twin Towers as the World’s Tallest Buildings ahead of the Willis (then Sears) Tower in Chicago, to much controversy.

While a total of 15 supertalls were completed in 2017, only 14 entered the World’s 100 Tallest Buildings list. Thus, 2017 saw the completion of the world’s first supertall building never to enter the 100 Tallest list – Huachuang International Plaza in Changsha, China.

Analysis

Overall, 2017 was a record-breaking year for skyscraper completions on a variety of fronts. We’re once again witnessing an all-time-high for 200-meter-plus building completions, with this year’s total increasing by 350% over the past decade. While the total number of tall building completions is an important metric to watch, the data on the rapid geographic diversification of 200-meter-plus building completions, in 69 cities across 23 countries, is perhaps the most telling result. In 2007, only 20 cities across the globe completed 200-meter-plus buildings – the highest number on record at the time. A decade later, the number of cities represented in this report has more than tripled. A record 28 of those cities completed their new tallest buildings in 2017.

The 20 Tallest Buildings Completed in 2017



1 Ping An Finance Center Shenzhen, China 599 meters (1,965 ft)	2 Lotte World Tower Seoul, South Korea 555 meters (1,819 ft)	3 Marina 101 Dubai, United Arab Emirates 425 meters (1,394 ft)	4 The Address Boulevard Dubai, United Arab Emirates 370 meters (1,214 ft)	5 Ahmed Abdul Rahim Al Attar Tower Dubai, United Arab Emirates 342 meters (1,122 ft)	6 Wilshire Grand Center Los Angeles, United States 335 meters (1,100 ft)	7 Yuexiu Fortune Center Tower 1 Wuhan, China 330 meters (1,083 ft)
8 Hon Kwok City Center Shenzhen, China 329 meters (1,081 ft)	9 Yantai Shimao No. 1 The Harbour Yantai, China 323 meters (1,060 ft)	10 Zhuhai St. Regis Hotel & Office Tower Zhuhai, China 322 meters (1056 ft)	11 Guangxi Finance Plaza Nanning, China 321 meters (1,053 ft)	12 Sinar Mas Center 1 Shanghai, China 320 meters (1,050 ft)	13 Jiuzhou International Tower Nanning, China 318 meters (1,043 ft)	14 Poly Pazhou C2 Guangzhou, China 311 meters (1,020 ft)
15 Huachuang International Plaza Tower 1 Changsha, China 300 meters (984 ft)	16 Jin Wan Plaza 9 Tianjin, China 300 meters (983 ft)	17 Shum Yip Upperhills Tower 2 Shenzhen, China 299 meters (982 ft)	18 China World Trade Center Phase 3B Beijing, China 296 meters (970 ft)	19 Concord International Centre Chongqing, China 290 meters (951 ft)	20 Skyland Office Tower & Skyland Residential Tower Istanbul, Turkey 284 meters (932 ft)	

Figure 16. The 20 tallest buildings completed in 2017.



Figure 17. 87th-Tallest in 2017: 150 North Riverside, Chicago, 221 meters. © Tom Rossiter Photography

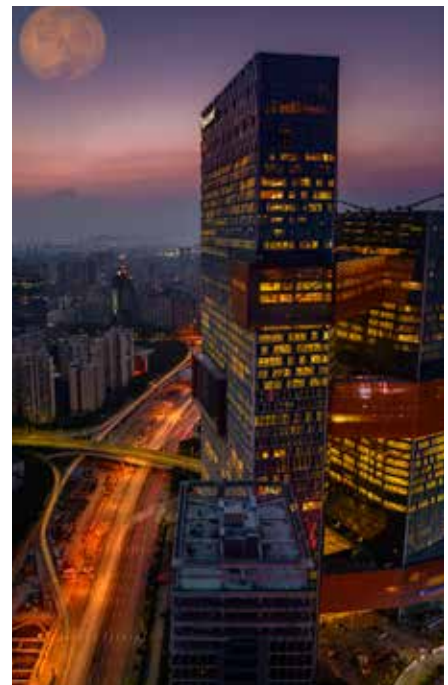


Figure 18. 49th-Tallest in 2017: Tencent Seafront Tower 1, Shenzhen, 246 meters © Shao Feng

China still leads the world in 200-meter-plus building completions, but the nation may start to lose its dramatic lead as other countries, such as India, accelerate economic and population growth. North America, which for much of the 20th century completed the majority of 200-meter-plus buildings in the world, is also beginning to see a resurgence in tall building construction. In addition, new technologies and increased international capital flows are facilitating the creation of ever-taller skyscrapers.

The data from 2017 shows a continuation of the trend towards a greater global proliferation of skyscraper construction. Most of the prevailing trends of the past few years – the preponderance of construction taking place in Asia, and in particular, China; the predominance of composite construction being used to achieve greater heights and more complex designs – have held steady.

But a few discoveries this year are notable, if not wildly divergent.

The increase in geographic diversity invites further scrutiny. Of the 69 cities with at least one 200-meter-plus building completion, 34 were in China. While not entirely surprising,

nevertheless it is clear that, in addition to powerhouses like Shenzhen, there are also some smaller regional cities joining the list, such as Baoji in Shaanxi province; Yantai, in Shandong province; Lianyungang, in Jiangsu; and Yinchuan, in Ningxia. Although in many cases each of these cities has erected only a single building of 200 meters or more in 2017, and each of these cities has more than one million people, the term “smaller regional city” is relative in China, which seems to be executing on its plan to create impressive skylines and more evenly distribute people in its campaign of mass urbanization.

Outside China, some infrequently-seen city names include Giv’atayim, Israel (near Tel Aviv); Izmir, Turkey; Nairobi, Kenya and Pyongyang, North Korea. The reasons for this are likely as diverse as these countries are from each other; the functions span office, residential and mixed-use.

The resurgence of all-residential tall buildings, against what had been an increasing trend towards a mix of functions, is also of interest. In the past, CTBUH has credited the prevalence of the mixed-use function in buildings at the upper end of

the height range to a developers’ hedging strategy. The greater the number of functions in the building, the less likely it is that economic weakness in one sector could delay or halt the project, or result in it being unsold or unrented for prolonged periods.

Skyscrapers are lagging indicators of economic trends. An investment strategy could be green-lighted under economic conditions that could change significantly throughout the construction period, which could be anywhere from two to 10 years or more. It is tempting to speculate that we are now seeing the built results of a full-blown recovery from the 2008 economic crisis, as greater confidence in single-function programs sparks a resurgence in speculative residential development. Further, there has been growing interest over the past several years in residential real-estate investment by absentee owners as a wealth management strategy. However, market dynamics vary greatly between regions, so it’s likely there are other factors to the story.

For a full list of all 200 meter building completions in 2017 see:
skyscrapercenter.com/year-in-review/2017



Figure 19. 10th-Tallest in 2017: Zhuhai St. Regis Hotel & Office Tower, Zhuhai, 322 meters. © Jason Leung



Figure 20. 80th-Tallest in 2017: FMC Tower at Cira Centre South, Philadelphia, 223 meters. © Lester Ali



Figure 21. 117th-Tallest in 2017: Rosewood Sanya and Int'l Finance Forum, Sanya, 207 meters. © 1st Image