Tall Building Completions Maintain Momentum in 2018

Abstract

The 2018 CTBUH Tall Building Year in Review and Tall Buildings in Numbers data analysis report found that 143 buildings of 200 meters' or greater height were completed in 2018, down by four from the all-time record of 147 in 2017. The year also saw 18 completed "supertalls" (buildings of at least 300 meters' height), the largest number ever. The report covers other statistical highlights of 2018 and predicts completions for 2019.*

Note: Please refer to *Tall Buildings in Numbers – The Global Tall Building Picture: Impact of 2018* in conjunction with this paper, pages 9–10.
*The study sets a minimum threshold of 200 meters' height because of the completeness of data available on buildings of that height.

Keywords: Statistics, Construction, Completions, 2018, Height, Urbanization

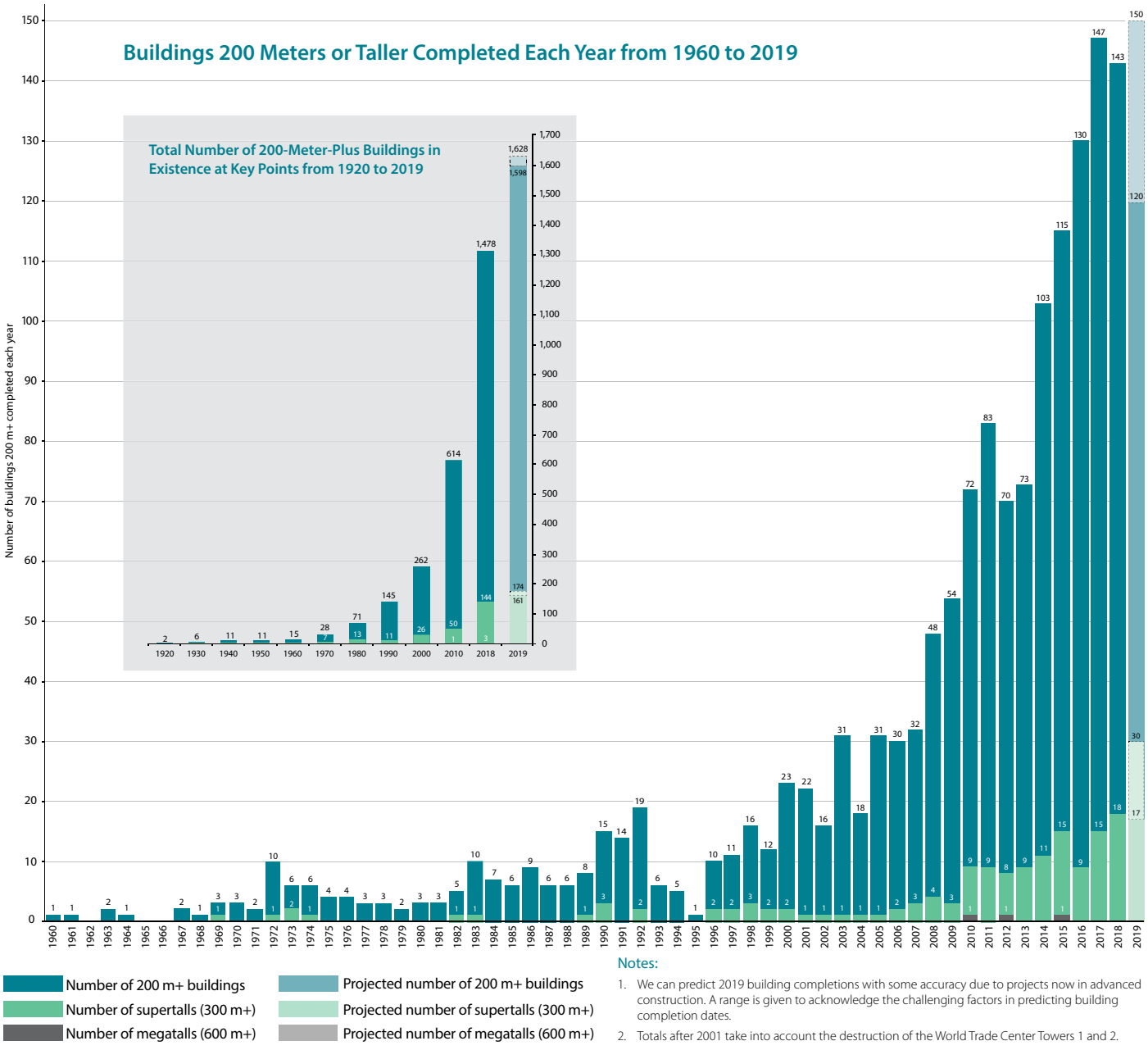


Figure 1. Number of 200-meter-plus buildings completed each year from 1960 to 2018, with projections through 2019.

Figure 2. Tallest in 2018: China Zun, Beijing, 528 meters. © CITIC Heye Investment

The astronomical growth in tall building construction observed over the past decade continued in 2018, though the total number of completed buildings of 200 meters' or greater height leveled off at 143 (see Figure 1), after hitting an all-time record of 147 in 2017. The total number of 200-meter-and-higher buildings in the world is now 1,478, a 141 percent increase from 614, in 2010. The total sum of heights of all completions in 2018 was 35,246 meters. This is down slightly from the all-time high of 35,849 in 2017, but it's still an impressive figure – if laid end-to-end, these buildings would exceed the length of Manhattan Island, which is about 21.6 kilometers long. The tallest building to complete in 2018 was the 528-meter China Zun in Beijing (see Figure 2). It is the fourth year in a row in which the tallest building to complete in that year is in China.

Key Worldwide Market Snapshots of 2018

Asia (Not including Middle East)

With 109 buildings, representing 76 percent of the total, Asia remained at the top of the rankings in 2018, recording slightly fewer than its 2017 total of 113 buildings of at least 200 meters in height (see Figure 3). For the 23rd year in a row, China has maintained its reign as the most prolific country when it comes to the construction of 200-meter-plus-tall buildings, with 88 completions in 2018, for 61.5 percent of the total. This is a record for China, exceeds last year's figure by eight, and represents an even greater proportion of the global total than the 2017 figure of 54.4 percent. China's previous record was set in 2016, with 86 buildings of 200 meters or higher. Second place was again held by the United States, with 13 completions, up from 10 in 2017 (see Figure 4). And once again, outdoing its own record from last year, Shenzhen, China, recorded 14 completions, making this the third year in a row in which the city completed the world's largest number of 200-meter-plus completions, and comprising nearly 10 percent of the global total. In addition to first-place Shenzhen, Beijing and Shenyang, tied for third with eight completions, and Nanning, with seven completions in sixth place, are in China. Jakarta, Indonesia, and Kuala Lumpur, Malaysia, were tied for seventh place, with five completions each (see Figure 6).

Another standout achievement was for Bangkok, which recorded three completions, including the city's and Thailand's new tallest building, Magnolias Waterfront Residences Tower 1, at 315 meters, just edging past the incumbent 314-meter King Power MahaNakhon.

Breaking the 400-meter mark for the first time, Vietnam recorded the completion of Vincom Landmark 81 in Ho Chi Minh City, a 461-meter building, which ranks as the second-tallest building to complete worldwide in 2018.

A total of 19 cities worldwide got a new tallest building, all but five of which were in Asia. The new heights being reached in Southeast Asia are likely indicative of improving economic conditions in countries such as Thailand, Cambodia and Vietnam, which are experiencing growth in industrial production, foreign direct investment, and tourism, among other inputs.

Any discussion of business or industry in 2018 would have to consider the role of China, the world's second-largest economy, which is undergoing changes under the leadership of President Xi Jinping. Bearing in mind that skyscrapers are lagging economic indicators that take years to plan, design and construct, the effects of

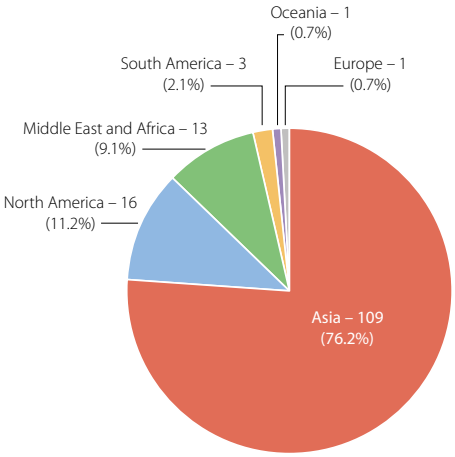


Figure 3. Buildings 200 meters or taller completed in 2018 by region.

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

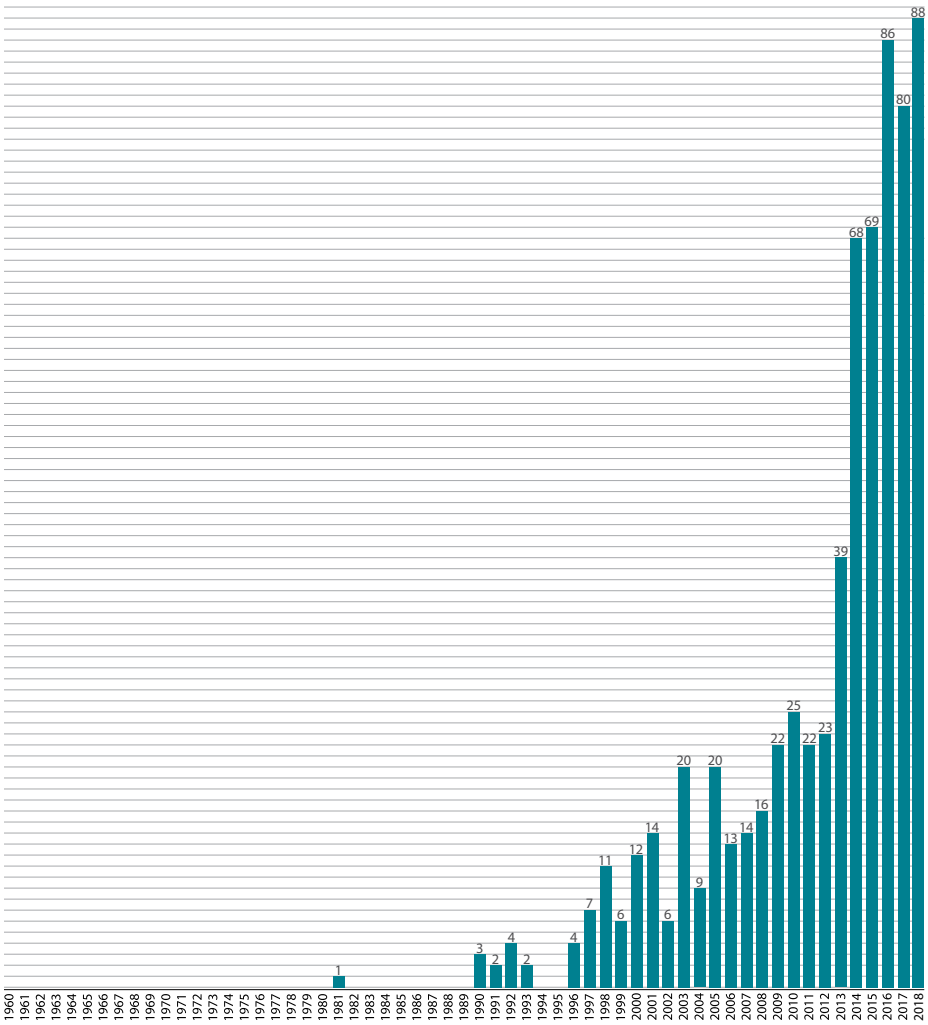


Figure 4. Number of 200-meter-plus tall buildings completed by region/country since 1960.

decisions made now will not substantially affect skyscraper completion rates for several years. Although 2018 was a banner year for skyscraper projects in the country, it is likely that coming years will register the effects of increased financial controls and more conservative debt financing policies. If these policies continue, China's seemingly limitless dominance of the tall building world may begin to falter. It can also be expected that any tariffs imposed against China would lead to disruptions in the global construction industry, particularly concerning steel, as well as in China itself. The ability of Chinese banks and developers to fund overseas projects could be further reduced; overseas investment has already been strongly curtailed during 2018, resulting in the cessation, sale, or interruption of Chinese investor-driven projects in Australia, the United States, and elsewhere.

Middle East and Africa

The Middle East performed better in 2018 than in the previous year, logging 13 completions, against nine for the region in 2017. This represents 9.1 percent of the global total. Dubai, in particular, bested its three completions in 2017, with 10 in 2018, putting it in second place for 200-meter-plus completions among cities. Six of these buildings were part of one of two multi-tower projects; four were in the DAMAC Towers by Paramount (see Figure 7), and two were part of Emaar Properties' The Address Residence – Fountain Views. The remaining completions in the region were Golden Tower, Jeddah, Saudi Arabia (205 meters) and two buildings in Kuwait City. Africa did not complete any 200-meter buildings in 2018.

The fact that more than half of the completions in the region were actually represented by only two projects has skewed results somewhat from what otherwise would be considered an average year. If each project were considered as a single building, there would be nine completions in the region, which is consistent with recent history. In the previous two years, the Middle East

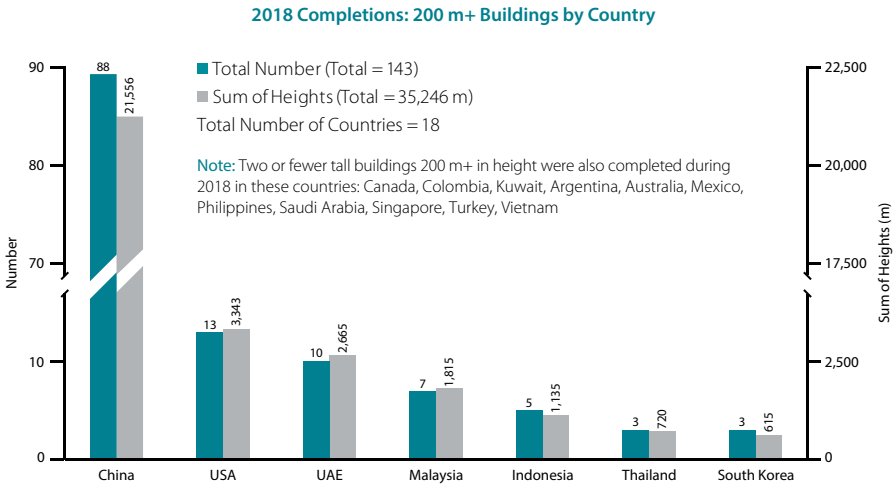


Figure 5. Buildings 200 meters or taller completed in 2018 by country.

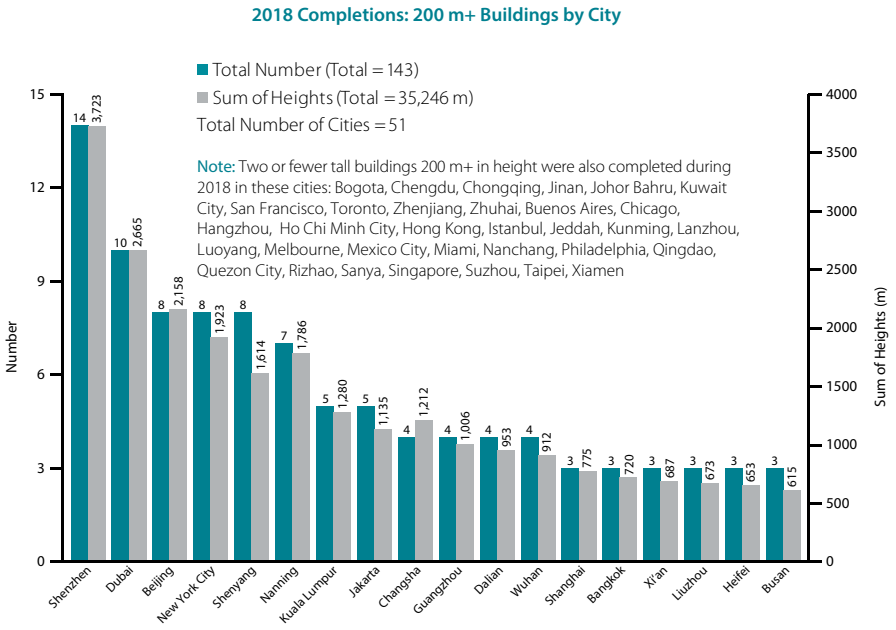


Figure 6. Buildings 200 meters or taller completed in 2018 by city.

completed nine buildings of 200 meters' or greater height.

North America (includes Central America)

North America rang in as a distant second place in the total number of 200-meter-plus building completions, with 16 in 2018, representing 11.2 percent of the global total. Nevertheless, this is a new record for the region, topping the prior record of 15 in 2017. In Canada, Toronto completed two buildings of at least 200 meters; Mexico completed one (the Torre Paradox in Mexico City (see Figure 8), at 234 meters); and the United States completed 13 (see Figure 5). Of these, New York City doubled its 2017 figure to eight in 2018, tying it for the third-most prolific city worldwide in terms of 200-meter building completions (see Figure 6). Notably, several cities got a new tallest building in 2018; these include Miami, with the Panorama Tower (252 meters); Philadelphia, with the Comcast Technology Center (342 meters); and San Francisco, with Salesforce Tower (326 meters) (see Figure 9).

Discussion of North American results can be roughly characterized along two themes: the continuing appetite for high-end (and tall) residential accommodation in expensive cities like New York City and Toronto; and the rise of technology firms that have become dominant in their respective categories–Salesforce in customer-relationship management (CRM) software and Comcast in digital and broadcast communications. It is also a story of two New York City megaprojects, World Trade

Figure 7. 32nd-Tallest in 2018: DAMAC Towers by Paramount, Dubai, 268 meters. © Lester Ali

Figure 8. 64th-Tallest in 2018: Torre Paradox, Mexico City, 234 meters. © Lester Ali

Figure 9. 14th-Tallest in 2018: Salesforce Tower, San Francisco, 326 meters. © Nathaniel Lindsey

Figure 10. 12th-Tallest in 2018: 3 World Trade Center, New York City, 329 meters. © Lester Ali

Center and Hudson Yards, coming into focus. At World Trade Center, according to the master plan established after September 11, 2001, only the Five World Trade Center tower has yet to begin construction (Two World Trade began construction, then stopped and was redesigned). 3 World Trade Center completed in 2018 (see Figure 10). At Hudson Yards, two of the six tall buildings in the first phase of the project are complete, and three are scheduled to complete in 2019, with the sixth projected to finish in 2022.

South America

South America had an exciting 2018, with two buildings becoming the tallest in their respective cities and countries: The BD Bacata Torre 1 (260 meters) was completed in Bogota, Colombia; while the Alvear Tower Puerto Madero (235 meters) completed in Buenos Aires, Argentina (see Figure 11). The second tower in the BD Bacata complex, Torre 2 (216 meters), was the third and final building of 200 meters or greater to complete in the region. In 2017, only one building in this category completed, and in 2016, there were none.

The BD Bacata project is noteworthy, as it is the first tall building known to have attempted to use a direct-to-individual-investor "crowdfunding" method, instead of typical investment banking and development channels. Investor confidence appears to be rising in Colombia, where several, taller (albeit conventionally-funded) projects are also either under construction or planned in Bogota.

Europe

Europe recorded the completion of only one building of 200 meters or greater, the Nurol Life building in Istanbul, Turkey, at 220 meters. This is a decline from 2017, when Europe recorded four completions, all of which, incidentally, were in Turkey. The country is undergoing ambitious construction efforts, including a new international airport in Istanbul that opened in 2018, though these have been clouded by doubts about whether the boom is sustainable (Kantchev 2018). CTBUH considers Istanbul and regions to the west to be part of Europe, while the eastern portion of Turkey is classified as part of the Middle East.

As for the rest of Europe, while there is substantial tall building activity in cities such as London, where a housing affordability crisis is driving the city to reckon with how to manage height and growth sustainably, in 2018 none of the projects cracked the 200-meter threshold for this study.

Australia and Oceania

The South Pacific region also was relatively quiet in 2018, recording just one 200-meter-plus building completion, the Victoria One in Melbourne, Australia. This is a decline from two in 2017 (also both in Melbourne), and three in 2016. The region typically produces 200-meter-plus buildings at this frequency, however, and this should not be taken as a sign that tall and urban projects are on the wane generally. In fact, numerous projects are currently underway that will be finishing in early 2019. For example, Aurora Melbourne Central (270 meters) is already partially occupied by tenants.

Completions by Function

The preponderance of office as the primary function in completed buildings 200 meters and higher continued in 2018, logging 60 buildings of 200 meters or greater height, down slightly from 62 buildings in 2017, and maintaining the overall share of 42 percent (see Figure 12). Residential functions made up 31.5 percent of completed buildings with a total of 45 buildings, maintaining a similar share from 2017, which saw 47 buildings completed and a 32 percent share. Mixed-use completions remained steady with 35 buildings, or 24.5 percent of the total, compared to 36 buildings and a 24.5 percent share in 2017. The only function to see an increased number of completions, if only slightly, was hotel, which had three completions in 2018, against two in 2017.

The complexities of national and local real estate markets are such that, it is not straightforward to diagnose this

phenomenon on a global scale. Looking at China alone, just over half of all completed buildings in our data set for that country – 48 – were office-only in function. In the United Arab Emirates, none of the 10 completions was an office building. It is fair to say that some developers and national building cultures may have a higher tolerance for the risk that comes with speculative residential developments than others. It is also true that some tall office buildings in some countries, including China, are constructed with substantial local government support and/or by/for state-owned enterprises, which have some flexibility to absorb market swings, for example, by moving employees into buildings that under-perform third-party leasing expectations. Such compensatory moves are more difficult–though certainly not impossible–to accomplish when there are unsold residential units.

Completions by Material

The role of concrete as the primary structural material solidified further in 2018, comprising the structure of 90 out of 143 buildings 200 meters and higher, a 62.9 percent share (see Figure 13). This is an increase from 73 (49.7 percent) in 2017. "Composite" structures, which use more than one material in spanning and supporting elements, constituted 50 (35 percent) of the buildings completed in 2018; a decrease in number and proportion from 2017, when the number was 62 (42.2 percent). "Mixed" structures, which employ distinct systems, one on top of the other, typically switching systems at the point where the program of the building changes, were in only two completions in 2018, representing 1.4 percent of the total. There was only one all-steel building of at least 200 meters completed in 2018, 181 Fremont in San Francisco, a 245-meter residential and office building.

As noted in last year's report, 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. However, concrete is not insulated from supply chain shocks; for instance, global supplies of sand that can be used in construction, in everything from concrete to glass, are rapidly diminishing (Greene 2017). This has already contributed to delays and other problems on some tall-building construction sites. Therefore, it is not assured that concrete – or extensive amounts of glazing – will always play such a dominant role in tall buildings.

Figure 11. 61st-Tallest in 2018: Alvear Tower Puerto Madero, Buenos Aires, 235 meters. © Maximiliano Moratto - Inmobidrone

Average Height

The average height of 200-meter-plus buildings completed in 2018 was 247 meters, a slight increase over the 244-meter figure for 2017. The average height of the World's 100 Tallest Buildings grew again, to 381 meters, from 372 meters in 2017. Meanwhile, the average height of the 20 tallest buildings completed in a given year again rose, to 353 meters in 2018, up from 350 meters in 2017 (see Figure 14 and Tall Buildings in Numbers, page 9).

"Supertall" Completions

The number of supertall buildings (those measuring 300 meters and taller) to be completed in a year broke a record again in 2018, rising to 18, from 15 in 2017. The total number of supertall buildings worldwide is now 144, up from 126 in 2017, a figure that represents an 89 percent increase over five years. In 2013, there were 76 buildings 300 meters or higher worldwide; in 2000, only 26.

There appears to be a continuing appetite to undertake the challenges inherent in building supertalls, which can be interpreted as a mixture of improved construction technologies, the desire to create landmark buildings for cities around the world, and the general economic ascendancy of developing countries, in Asia and elsewhere.

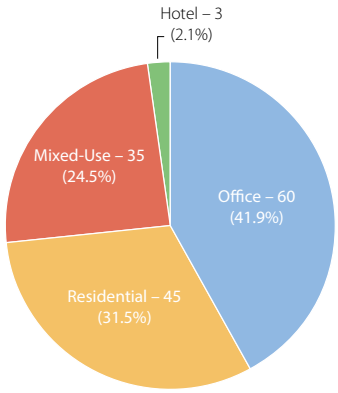


Figure 12. Buildings 200 meters or taller completed in 2018 by function.

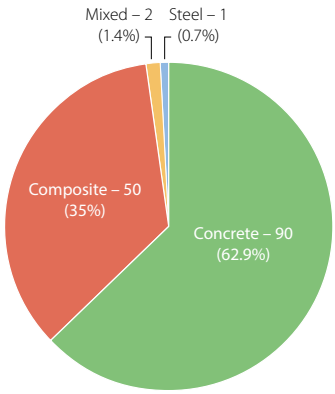


Figure 13. Buildings 200 meters or taller completed in 2018 by structural material.

The 20 Tallest Buildings Completed in 2018

1
China Zun
Beijing, China
528 meters (1,731 ft)

2
Vincom Landmark 81
Ho Chi Minh City, Vietnam
461 meters (1,513 ft)

3
Changsha IFS Tower T1
Changsha, China
452 meters (1,483 ft)

4
China Resources Tower
Shenzhen, China
393 meters (1,288 ft)

5
Nanning Logan Century 1
Nanning, China
381 meters (1,251 ft)

6
Hanking Center Tower
Shenzhen, China
350 meters (1,148 ft)

7
Four Seasons Place
Kuala Lumpur, Malaysia
343 meters (1,124 ft)

8
Comcast Technology Center
Philadelphia, United States
342 meters (1,121 ft)

9
One Shenzhen Bay Tower 7
Shenzhen, China
341 meters (1,120 ft)

10
Suning Plaza Tower 1
Zhenjiang, China
338 meters (1,109 ft)

11
DAMAC Heights
Dubai, United Arab Emirates
335 meters (1,099 ft)

12
3 World Trade Center
New York City, United States
329 meters (1,079 ft)

13
Baoneng Center
Shenzhen, China
327 meters (1,074 ft)

14
Salesforce Tower
San Francisco, United States
326 meters (1,070 ft)

=15
Changsha IFS Tower T2
Changsha, China
315 meters (1,033 ft)

=15
Magnolias Waterfront Residences Tower 1
Bangkok, Thailand
315 meters (1,033 ft)

17
Honglou Times Square
Lanzhou, China
313 meters (1,027ft)

18
Guangfa Securities Headquarters
Guangzhou, China
308 meters (1,010 ft)

19
Huaxun Center
Shenzhen, China
286 meters (938 ft)

20
The Address Residence - Fountain Views I
Dubai, United Arab Emirates
283 meters (929 ft)

Figure 14. The 20 tallest buildings completed in 2018.

Figure 15. Fourth-Tallest in 2018: China Resources Tower, Shenzhen, 393 meters. © Tim Griffith

The World's 100 Tallest Buildings: Impact of 2018 (refer to pages 9–10)

The dominance of Asia as a region in terms of the proportion of the World's 100 Tallest Buildings continued to grow in 2018, rising to 59 buildings, from 54 in 2017. The Middle East accounted for 23, a decrease from 26 in 2017, and from 24 in 2016. North America has 14 of the 100 tallest, down one from 15 in 2017. Europe's figure changed to three, from four in 2017 and two in 2016. One of the Tallest 100 is in Oceania – the Q1 Tower in Australia's Gold Coast (323 meters, rank number 85), which was completed in 2005.

Mixed-use remained the dominant function in the 100 Tallest in 2018, reflecting 47 buildings, an increase of two from 2017. The figure for office functions was 38. There were 10 buildings of at least 200 meters with an all-residential function completed in 2018,

Figure 16. Ninth-Tallest in 2018: One Shenzhen Bay Tower 7, Shenzhen, 341 meters. © Vivien Liu

the same as in 2017; hotels represented five buildings in 2018, compared to six in 2017.

Composite materials again constituted the majority of the primary structures of the World's 100 Tallest Buildings, increasing the share to 57 buildings in 2018 from 52 in 2017. Concrete was the primary material in the structures of 30 buildings, a decrease from 33 in 2017. The number of all-steel buildings in the Tallest 100 dropped from 10 in 2017 to nine in 2018. Those buildings reported as being of "mixed" construction, in which distinctive sections of the buildings are predominantly steel or concrete, decreased to four in 2018, down from five in 2017.

By nature, the 100 Tallest list tends to be more consistent in terms of its composition across the factors of location, function and structural materials, than does the year-to-year list of tall completions. Membership in the 100 Tallest requires the very optimum combination of all those factors, in order for these enormously expensive structures to be viable.

Buildings Entering the 100 Tallest Buildings List

Sixteen new buildings entered the 100 Tallest list in 2018, up from 14 in 2017. The all-time record of new entries to the 100 Tallest was set in 2011, with 18 buildings joining that year. The shortest building to join the list in 2018 was Changsha IFS Tower T2 in China, at 315 meters (rank number 100). This leaves two supertall (300-meters-and-higher) buildings completed in 2018 off the 100 Tallest list – Honglou Times Square, Lanzhou, China (313 meters); and Guangfa Securities Headquarters, Guangzhou, China (308 meters). Last year was the first in which a supertall building did not enter the 100 Tallest list.

The entry of China Zun, Beijing (528 meters), the tallest building to complete in 2018, into the 10 Tallest list, at position 8, has resulted in the removal of International Commerce Centre (ICC), Hong Kong (484 meters), constructed in 2010. The ICC is now the 11th-tallest building in the world.

Projections for 2019

As indicated in Figure 2, we expect between 120 and 150 buildings of 200 meters' or greater height to complete in 2019. This range takes into consideration the total number of projects currently underway, but it is common for a substantial percentage of projects anticipated for completion in a given year to be delayed into the next year or later. More infrequently, some projects finish in advance of their projected schedules. We must also acknowledge the increasing economic and political volatility in many places around the world. Our increasingly interconnected, global industry means that disruptions to planning, design and construction of tall building projects could occur unexpectedly. As always, the most up-to-date information about the status of skyscrapers around the world can be found at the CTBUH Skyscraper Center: www.skyscrapercenter.com

For a full list of all 200 meter building completions in 2018 see:
skyscrapercenter.com/year-in-review/2018

References

CTBUH SKYSCRAPER CENTER (2018). The Skyscraper Center, Council on Tall Buildings and Urban Habitat. [Online:] www.skyscrapercenter.com. Accessed December 5, 2018.

GREENE, D. (2017). ***World Faces Global Sand Shortage.*** Morning Edition, National Public Radio, 21 July 2017. [Online:] https://www.npr.org/2017/07/21/538472671/world-faces-global-sand-shortage.

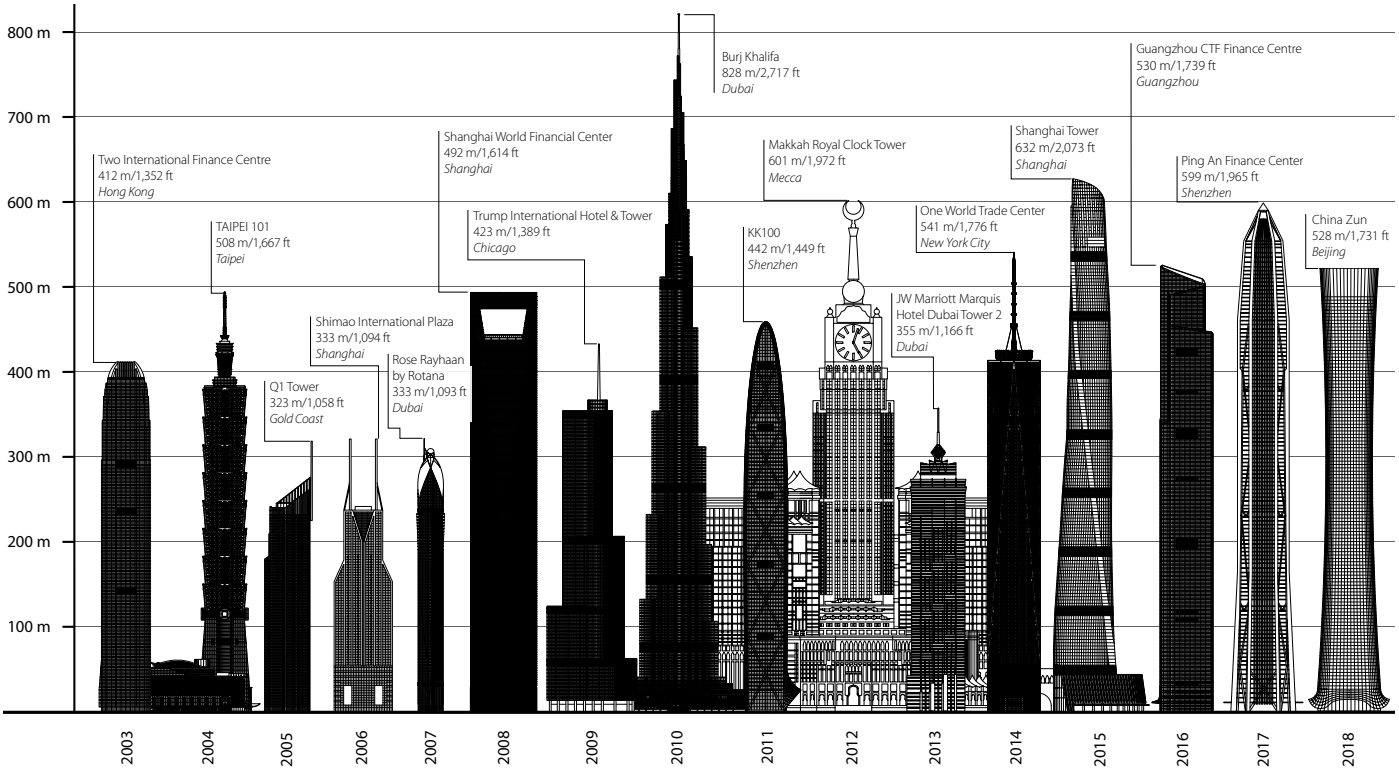
KANTCHEV, G. (2018). ***Building Boom Unravels, Deepening Turkey's Economic Crisis.*** The Wall Street Journal, 11 September 2018. [Online:] https://www.wsj.com/articles/dreams-turn-sour-as-turkeys-building-boom-sags-1536658200?mod=searchresults&page=1&pos=9.

The Global Tall Building Picture: Impact of 2018

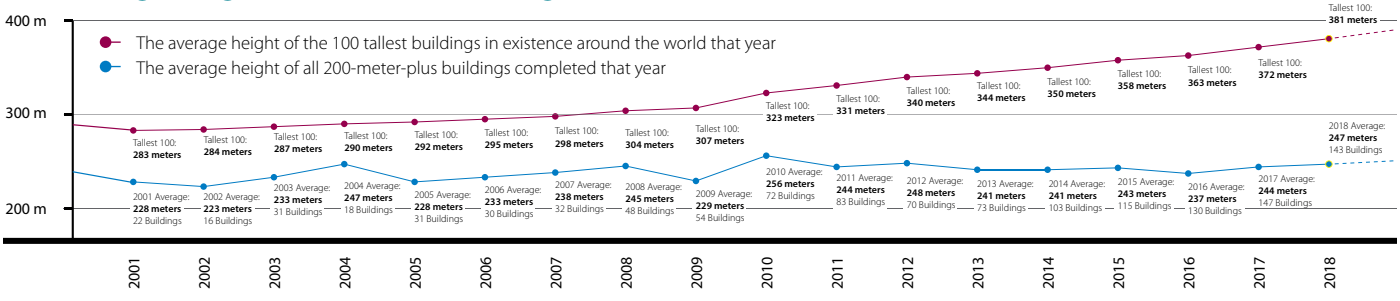
In 2018, 143 buildings of 200 meters' height or greater were completed. This is a slight decrease from 2017's record-breaking total of 147, and it brings the total number of 200-meter-plus buildings in the world to 1,478, marking an increase of 141 percent from 2010, and 464 percent from 2000, when only 262 existed. Asia continued to be the most dominant region in terms of skyscraper construction, and China within it, as in several years previously. For more analysis of 2018 completions, see "CTBUH Year in Review: Tall Trends of 2018," pages 1-8.

World's Tallest Building Completed Each Year

Starting with the year 2003, these are the tallest buildings that have been completed globally each year.



The Average Height of the Tallest Buildings



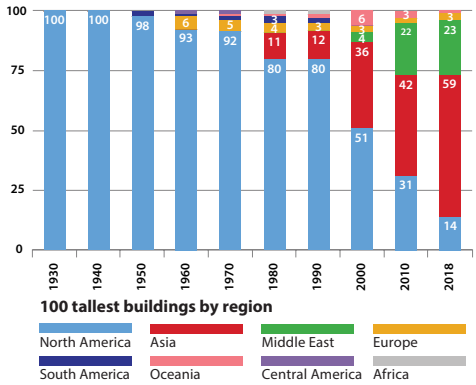
China recorded 88 completions, the most by a single country, beating its own record by two. Eight is a lucky number in China.

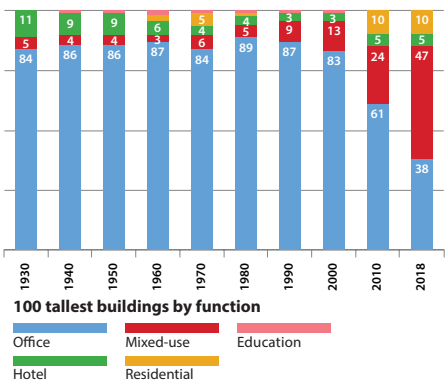
China Zun, at 528 meters, was the tallest building to complete in 2018. It is now the world's eighth-tallest building.

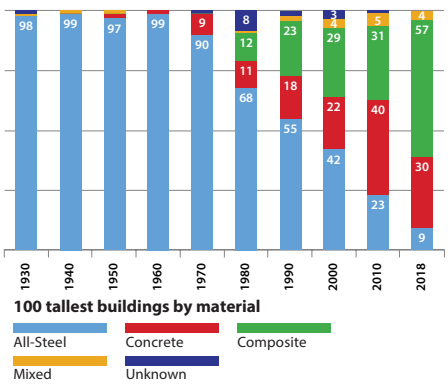
18 A record number (18) of **supertall (300 m+) buildings** completed this year.

World's Tallest 100: Analysis

A plurality of the world's tallest 100 buildings still are located in Asia, have a mix of uses, and employ composite structural systems.

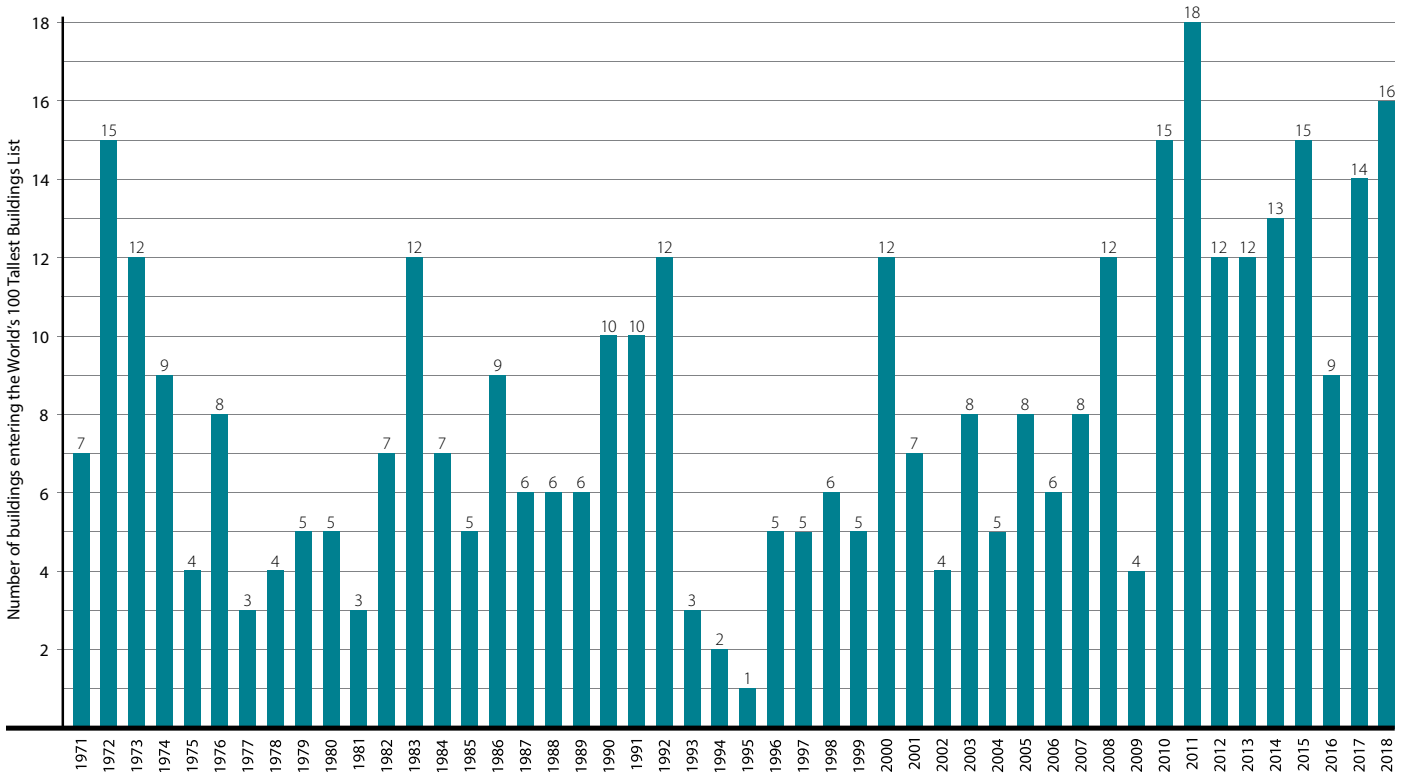






Number of Buildings Entering the World's 100 Tallest by Year

A total of 16 buildings entered the global 100 Tallest list in 2018, just below the 2011 record of 18.



The **BD Bacata Torre 1**, Bogota, Colombia's new tallest building, began life as a "crowdfunding" project with small individual investments.

353

The **average height** in meters of the 20 Tallest Buildings completed in 2018.

The two tallest buildings to finish in **San Francisco** in 2018 have tech companies Facebook and Salesforce as main tenants.