

Title: **Tall Buildings in 2020: COVID-19 Contributes To Dip in Year-On-Year Completions**

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# Tall Buildings in 2020: COVID-19 Contributes To Dip in Year-On-Year Completions

### Abstract

*In 2020, the tall building industry constructed 106 buildings of 200 meters' height or greater, a 20 percent decline from 2019, when 133 such buildings were completed.\* The decline can be partly attributed to work stoppages and other impacts of the COVID-19 pandemic. This report provides analysis and commentary on global and regional trends underway during an eventful year.*

Note: Please refer to *Tall Buildings in Numbers—The Global Tall Building Picture: Impact of 2020* in conjunction with this paper, pages 48–49.

\*The study sets a minimum threshold of 200 meters' height because of the completeness of data available on buildings of that height.



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**Keywords:** Construction, COVID-19, Development, Height, Hotel, Megatall, Mixed-Use, Office, Residential, Supertall

### Introduction

For many people, 2020 will be remembered as the year that nothing went to plan. The same can be said for the tall building industry. As a global pandemic took hold in the first quarter, numerous projects around the world, at various stages, ground to a halt as restrictions on assembly came into force. It is therefore not surprising that 2020 yielded 106 completions of buildings 200 meters and taller, a 20 percent decline from 133 in 2019, and nearing a level last seen in 2014, when 105 such buildings were constructed (see Figure 1).

This is the second year in a row in which the completion figure declined. In 2019, the reasons for this were varied, though the change in the tall building climate in China, with public policy statements against needless production of exceedingly tall buildings, constituted a strong factor that has persisted into 2020.

The tallest building to complete in 2020 was Central Park Tower in New York City, at 472 meters. This is the first time in five years in which the tallest completed building was not in China, and the first time since 2014, when One World Trade

Center (New York City) completed, that the tallest building of the year was in the United States.

This is also the first year since 2014 in which there has not been at least one building taller than 500 meters completed.

### Effects of COVID-19

As with most other enterprises, the degree to which the COVID-19 pandemic directly affected the construction schedule of a tall building in 2020 was highly variable in relation to local regulations and the ability of the contractor to keep a sufficient number of workers on-site. CTBUH is anecdotally aware of nine projects across Malaysia, India and Brazil whose completion schedules were pushed into 2021 as a direct consequence of COVID-19. There were mandated work stoppages in cities such as New York and San Francisco, though these could not be traced to any specific delays. As tall buildings are often lagging economic indicators, any chilling effect that economic conditions or work interruptions may have had on new project starts, or projects that were under construction in 2020 and were scheduled to be completed in 2021 or later, remains to be seen. It must be remembered, the economic crisis of 2008 was not reflected

“There were 106 completions of 200-meter-plus buildings, a 20 percent decline from 2019, and nearing a level last seen in 2014, when 105 such buildings were constructed. This is the second year in a row in which the completion figure declined.”

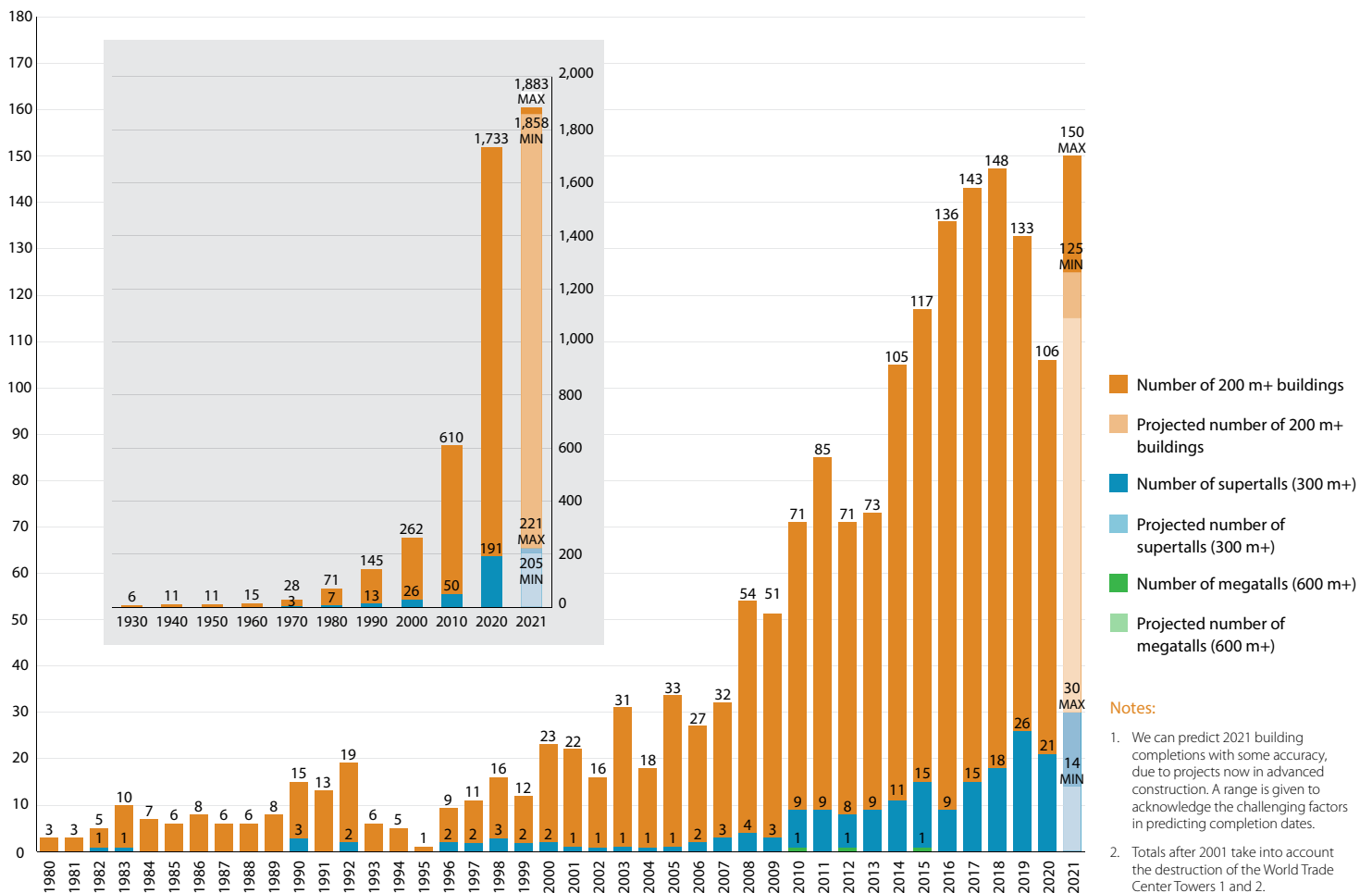


Figure 1. Main chart: Number of 200-meter-plus buildings completed in each year from 1980 to 2020, with a 2021 projection. Inset: Total number of 200-meter-plus buildings in existence at decade's end, from 1930 to 2020, with a 2021 projection.

on skylines, in terms of lower completion rates, until 2010 and 2011.

### Key Worldwide Market Snapshots

It can be assumed that many more projects than discussed previously encountered difficulties due to COVID-19, if indirectly. And of course, there were other reasons for delays. One project in New York became embroiled in a zoning dispute. Work on Baku Tower was halted due to Azerbaijan's military conflict with Armenia.

China alone still completed more than half the total buildings in the study (56), down

from 57 in 2019 and 92 in 2018. Asia (excluding the Middle East) accounted for 66 percent of the global total, compared to a 69 percent share in 2019 (see Figure 2).

The second-most prolific country was the United Arab Emirates, which completed twelve 200-meter-plus buildings, followed by the United States with 10, and the United Kingdom with five (see Figures 3 and 4). India completed three 200-meter-plus buildings in 2020, all of which are in Mumbai, and two of which, World One and World View, are in the same complex, and are the city's and country's new tallest buildings. Mexico had two entries in the 200-meter-plus club, with Monterrey,

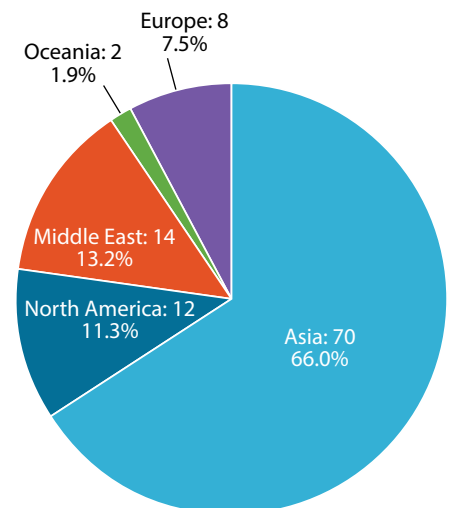


Figure 2. Buildings 200 meters or taller completed in 2020, by region.

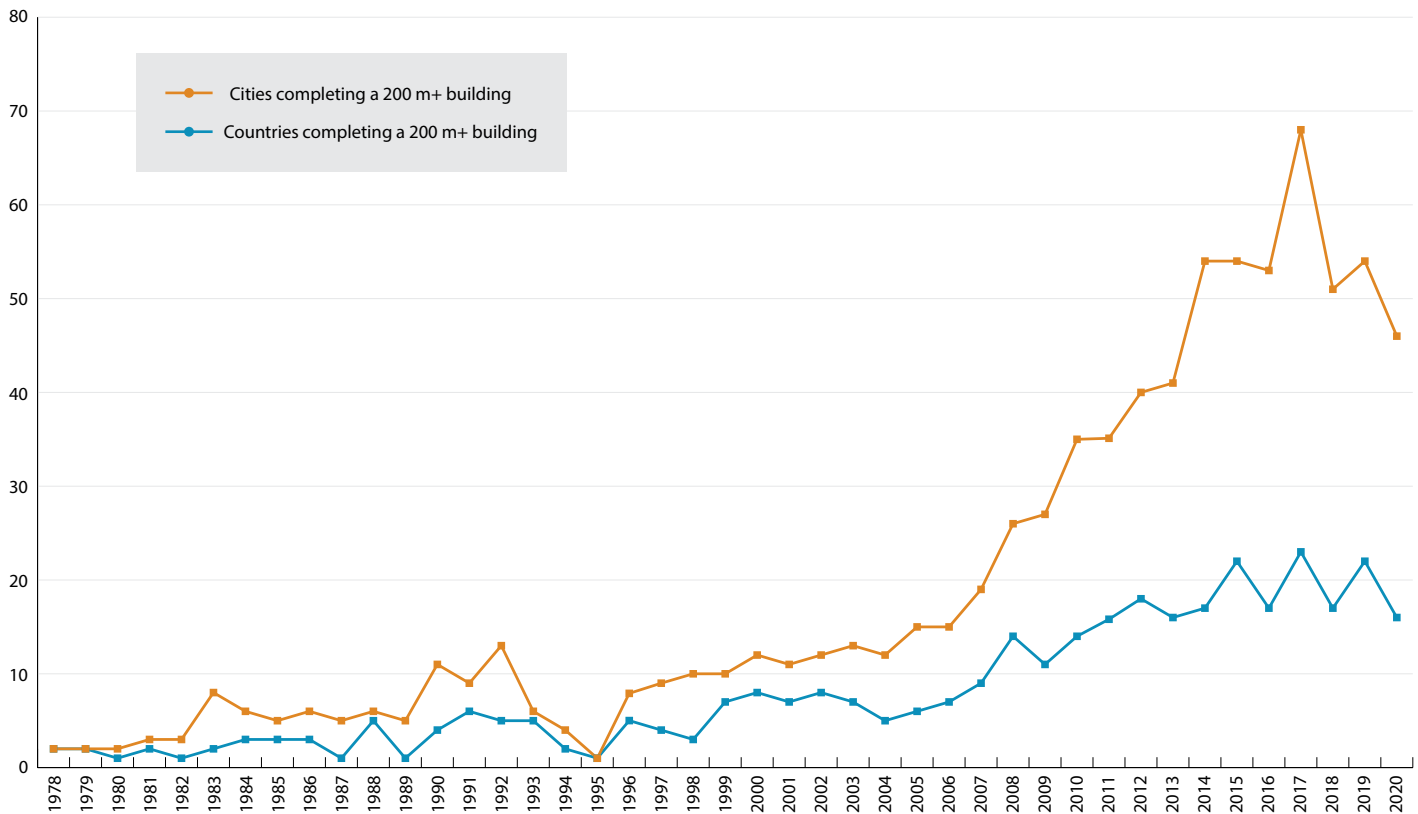


Figure 3. Number of cities and countries completing a 200-meter-plus building, 1978–2020.

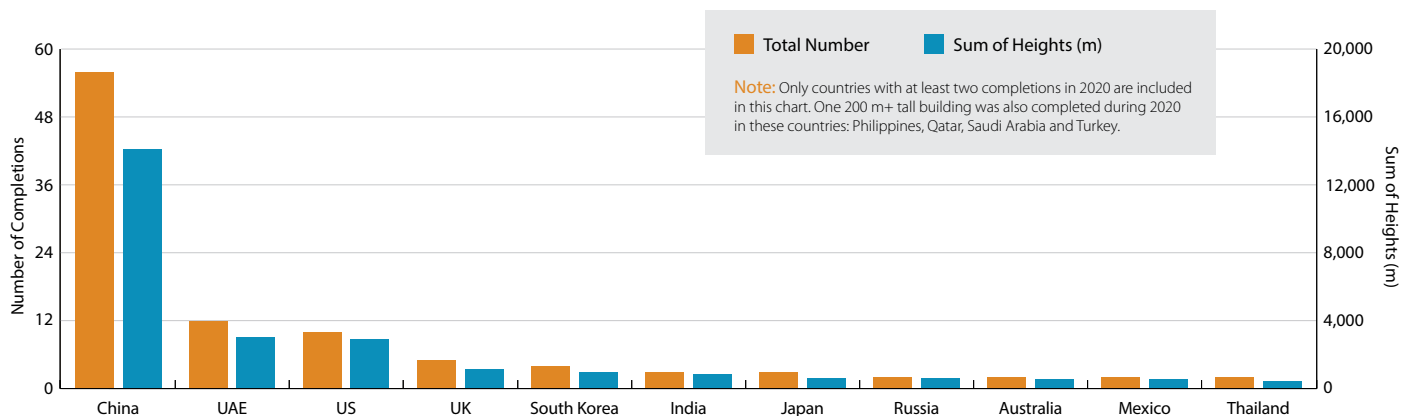


Figure 4. Buildings 200 meters or taller completed in 2020, by country.

the northern industrial capital, and its well-heeled neighbor San Pedro Garza Garcia each contributing one completion. T. Op Torre 1 in Monterrey (305 meters), is the first supertall to complete in Mexico. It is notable that this occurred outside Mexico City, traditionally the locus of the nation's tall building activity.

The most prolific skyscraper-building city this year was Dubai, with 12 completions, accounting for all of the UAE's 200-meter-plus buildings and topping its 2019 total by three (see Figure 5). The last time Dubai held this title was 2010, the year the world's current tallest building, the Burj Khalifa, was completed. This broke the streak of Shenzhen, which was the world-champion

city four times in a row from 2015 to 2019. In 2020, Shenzhen completed nine such buildings, down from 18 in 2019, dropping the south China megacity to second place.

There were 16 cities to get a new tallest building, down from 19 in 2018 and 20 in 2019 (see Table 1).

### Cities With the Two Tallest Buildings in One Year

New York City had the two tallest buildings to complete in 2020, Central Park Tower, at 472 meters, and One Vanderbilt, at 427 meters (see Table 2, Figure 6, and Figure 7).

It is quite rare for one city to claim the tallest two buildings to complete in a given year—but this is the fourth time this has occurred in New York City for buildings 200 meters

and higher. The first time, in 1930, the Bank of Manhattan Building (283 meters) briefly became the world's tallest building, but was surpassed by a cleverly-disguised spire inside the crown of the Chrysler Building (319 meters), which was raised at the last minute to claim the title.

The second time was the year after—1931, when the Empire State Building (381 meters) and Twenty Exchange (The City Bank Farmers Trust Building) (226 meters) were

completed. The third was in 1963, when the MetLife (Pan Am) Building (246 meters) and 277 Park Avenue (209 meters) both completed. The two original World Trade Center towers (No. 1, North Tower, 417 meters, 1972; and No. 2, South Tower, 415 meters, 1973) completed in different years.

In the entire history of skyscraper construction, the two tallest buildings to complete in a given year (of 200 meters'

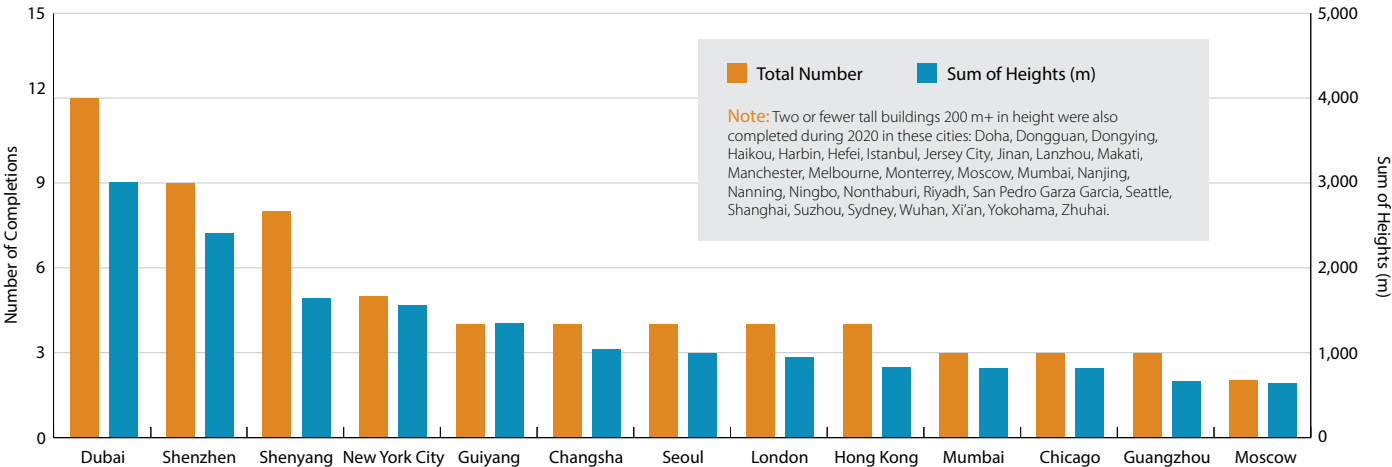


Figure 5. Buildings 200 meters or taller, completed in 2020, by city.

Rank	Building Name	Location	Floors	Height	
				Meters	Feet
1	Nanning China Resources Tower	Nanning, China	87	403	1,321
2	Guiyang International Financial Center T1	Guiyang, China	79	401	1,316
3	Hengqin International Finance Center	Zhuhai, China	69	338	1,108
4	Jinan Center Financial City A5-3	Jinan, China	69	333	1,093
5	Australia 108	Melbourne, Australia	100	317	1,039
6	T.Op Torre 1	Monterrey, Mexico	64	305	1,002
7	World One	Mumbai, India	76	280	919
8	One Barangaroo	Sydney, Australia	71	271	890
9	99 Hudson Street	Jersey City, United States	76	271	889
10	R&F Riverside New City - Ritz-Carlton Hotel	Harbin, China	56	270	885
11	Landmark Tower	Haikou, China	51	260	853
12	Changchun International Finance Center Tower 1	Changchun, China	47	226	741
13	Ganzhou Baoneng Center	Ganzhou, China	43	218	715
14	Dongying World Finance Center	Dongying, China	48	215	705
15	The Politan Aqua West Tower	Nonthaburi, Thailand	61	214	703
16	Deansgate Square South Tower	Manchester, United Kingdom	66	200	658

Table 1. Cities receiving a new tallest building in 2020.

Rank	Schindler Projects
2	<b>One Vanderbilt</b> 427 m / 1,401 ft; New York City, US
=12	<b>Twin Towers Guiyang</b> 335 m / 1,099 ft; Guiyang, China
24	<b>World One</b> 280 m / 919 ft; Mumbai, India
43	<b>Cadre City Plaza</b> 257 m / 843 ft; Guangzhou, China
=81	<b>Pullman Doha West Bay</b> 208 m / 682 ft; Doha, Qatar
86	<b>Ningbo Guohua Financial Tower</b> 206 m / 677 ft; Ningbo, China

Table 2. Schindler projects completed in 2020.

or greater height) have only occurred in the same city on 10 occasions. Other cities to have had this distinction include Chicago (1969 and 1989), Houston (1982 and 1983), Kuala Lumpur (1998), and Dubai, in 2000.

### UK: Boom Before Brexit?

In 2020, London completed four buildings over 200 meters—the most in any year—despite shadows hanging over the city as the UK moves to finalize its exit from the European Union, which is expected to reduce office demand (see figures 8 through 11). London had only completed five such

buildings before in its entire history, and never more than one in a year. Three of the four are in Canary Wharf, the financial district purpose-built to kick off London's "Big Bang" of financial deregulation in the mid-1980s, turning it into the finance world's front door to Europe. Notably, three of the four are residential or combination residential/hotel towers (and all in Canary Wharf), and only one, Twentytwo, is an office building in London's traditional financial center, the City.

Not to be outdone, Manchester had something of a tower boom as well. Deansgate Square South Tower topped out at 200.5 meters, giving Manchester a new tallest building, besting the 169-meter Beetham Tower, completed in 2006.

## The Two Tallest in 2020

The two tallest buildings to complete in 2020 were both in New York City. This is only the 10th time in history that one city hosted the two tallest buildings to complete in a given year. It is the fourth time New York City has done so.



Figure 6. Central Park Tower. © Lester Ali  
Height: 472 m / 1,550 ft  
City: New York City



Figure 7. One Vanderbilt. © Lester Ali  
Height: 427 m / 1,401 ft  
City: New York City

## The 20 Tallest Buildings Completing in 2020

The 20 tallest buildings to complete in 2020 are shown in Figure 12. All of these buildings are supertalls (300 meters and higher). This is the second time this has occurred (it was also the case in 2019). Of these, 11 were located in China, roughly paralleling its share of the 200-meter-plus completions; three in the United States, representing 15 percent of the total (against 9 percent in the 200-meter-plus club); and three in the United Arab Emirates, also representing 15 percent (against 11 percent in the 200-meter-plus club). This marks the first time Mexico has had a supertall completion, or has entered the 20 tallest completions list for a given year. The average height of the 20 tallest buildings declined to 351 meters, down from 377 meters in 2019 (the highest figure recorded in 20 years).

From a functional perspective, among the 20 tallest of 2020, nine buildings (45 percent) were mixed-use, compared to 29 percent in the 200-meter-plus class of 2020. Absent additional data, it can reasonably be inferred that the disposition of owner/developers to plan their tall buildings with a mix of uses increases substantially with height. The greater the height, the greater the construction cost and risk of the financial equation for any one market sector not



penciling out, and thus the impetus to diversify. This is reinforced by a similar trend taking place among in the world's 100 tallest buildings over time (see next section).

### Impact on the World's 100 Tallest

*See Tall Buildings in Numbers—The Global Tall Building Picture: Impact of 2020, pages 48–49, for graphical representations of this section.*

From a regional perspective, the relative share of the 100 tallest buildings in North America grew slightly year-on-year, while Asia's share held steady. In 2020, North America represented 14 percent of the world's 100 tallest buildings (up 1 percent from 2019), with Asia accounting for 61 percent (unchanged from 2019) and the Middle East, 20 percent (down 2 percent from 2019). At the end of the previous decade, in 2010, the shares were 31 percent for North America, 42 percent for Asia, and 22 percent for the Middle East.

A total of 14 buildings entered the 100 tallest list in 2020, down from 17 in 2019, and below the all-time record of 18 in 2011.

In terms of function, 36 percent of the 100 tallest buildings worldwide were office-only in 2020. Forty-nine percent were mixed use, 11 percent were residential, and 4 percent were hotel-only. The office and hotel shares were unchanged from 2019, but mixed-use declined by 2 percent and residential-only increased by 2 percent. In 2010, 61 percent of the world's 100 tallest buildings were office-only, 24 percent were mixed-use, 5 percent were hotel-only, and 10 percent were residential.

With respect to materials, in 2020, the 100 tallest buildings were 9 percent all-steel construction (compared to 8 percent in 2019), 29 percent concrete (unchanged from 2019), 58 percent composite (1 percent lower than 2019), and 4 percent mixed structures (unchanged from 2019). A "composite" structure uses a combination of two or more materials in the main structural elements, such as concrete-filled steel tubes. A "mixed"

### UK: Boom Before Brexit?

Despite the UK's exit from the European Union and the expected decline in office demand that this will entail, London completed more 200-meter-plus buildings in 2020 than in any prior year. Interestingly, only one of these four buildings (Twentytwo) is an office building located in the City. The other three are residential or combination residential/hotel, and located in Canary Wharf, originally conceived as a financial trading district that would provide a front door to Europe via the UK in the 1980s.



Figure 8. Twentytwo. © Matt Brown (cc by-sa)  
Height: 278 m / 912 ft  
City: London

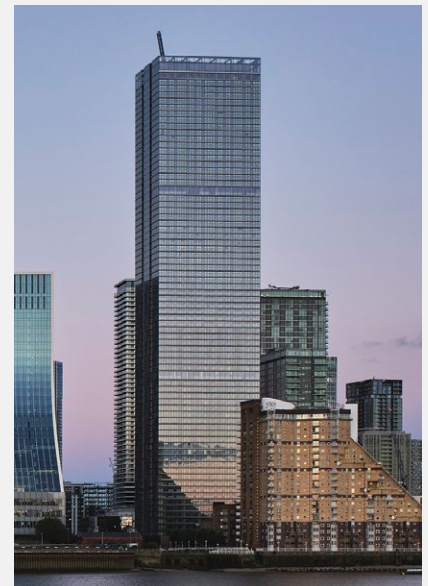


Figure 9. Landmark Pinnacle. © Canary Wharf Group  
Height: 233 m / 764 ft  
City: London

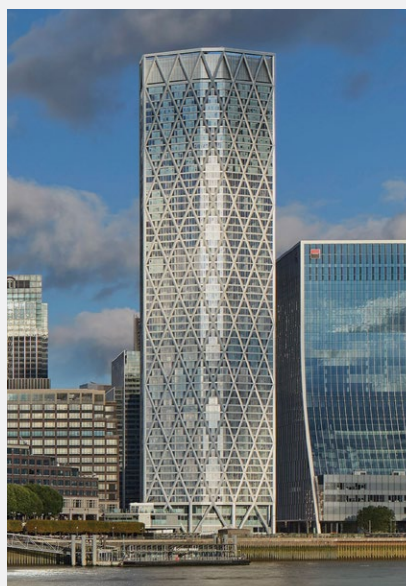


Figure 10. Newfoundland. © Canary Wharf Group  
Height: 218 m / 715 ft  
City: London



Figure 11. Valiant Tower. © Foster + Partners  
Height: 215 m / 705 ft  
City: London

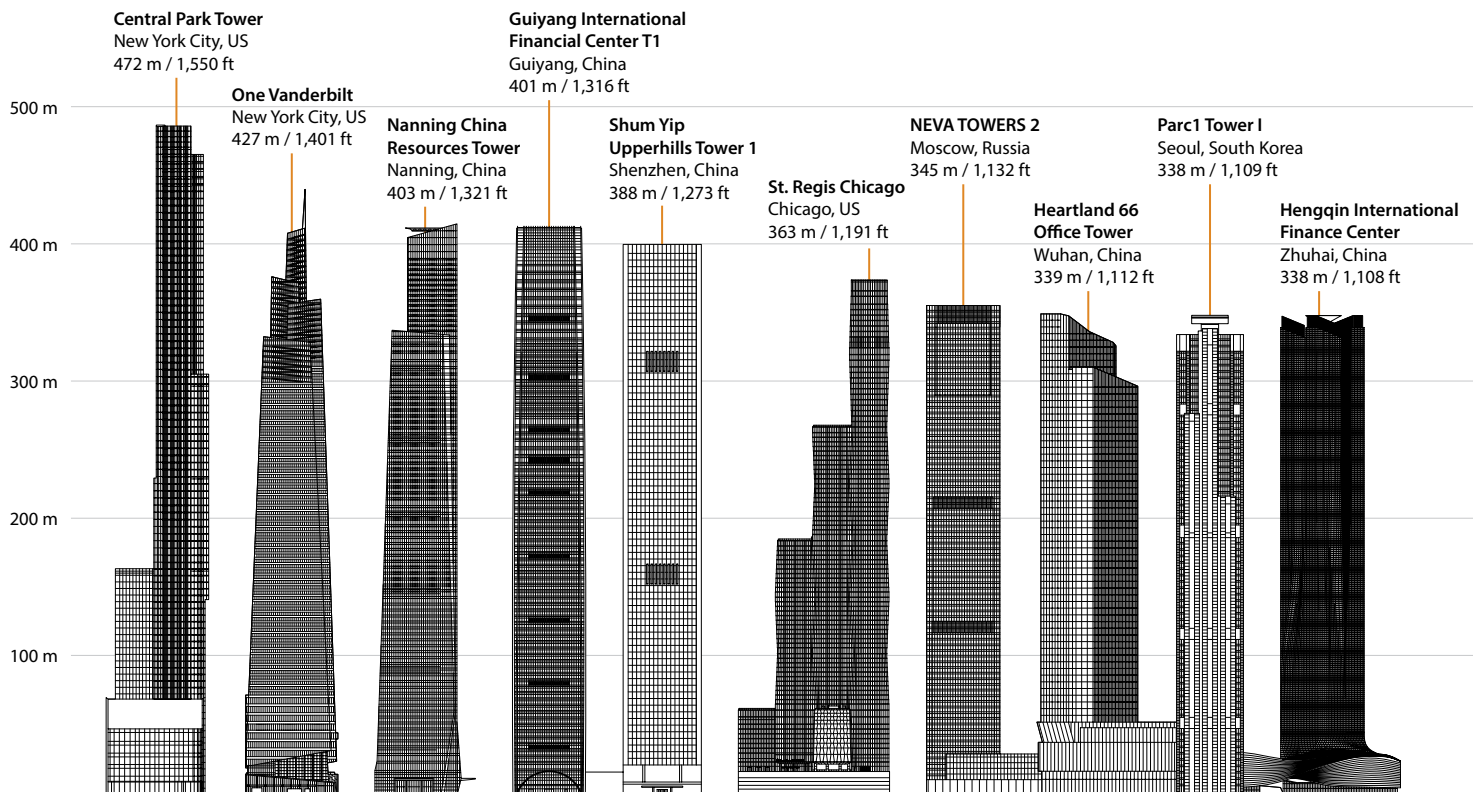


Figure 12. The 20 tallest buildings to complete in 2020.

structure uses two distinct systems, one on top of the other. In 2010, the share of all-steel buildings in the tallest 100 was 23 percent; concrete represented 40 percent of the total; 31 percent were composite structures; 5 percent were mixed and one building was marked as “unknown.”

The prevailing trends of the past decade continued to manifest in 2020, with some minor variations. There has been a general trend toward greater use of composite structures and a mix of uses in the 100 tallest buildings since at least 1980. Both of these trends can be seen as reflections of owner/developers’ risk-limiting exercises. Using combinations of steel and concrete plays to the strengths of both of those materials, while offsetting the weaknesses.

Likewise, given the long lead times and great expense involved in planning and constructing tall buildings, particularly the very tallest, having a variety of uses spread throughout the building means that volatility in one market sector will not solely determine the fate of the building’s profitability. The two most relevant examples recently were the 2008 financial crash, which heavily affected residential financing and construction, and the current questions around how much

office space the world will need, and how quickly business and leisure hotel occupancy demand will recover, once COVID-19 vaccines are widely available.

The year-to-year variations are not as significant as the decade-by-decade trends, due to the long lead times as mentioned above. It is interesting that North America as a region increased its share of the 100 tallest between 2019 to 2020, but at 1 percent across one year, it is not statistically significant. The significant trendlines will become obvious closer to 2030.

The average height of the world’s 100 tallest buildings is now 399 meters, up from 393 meters in 2019. This is the 18th year in a row this number has increased. The average height of all buildings 200 meters and higher to complete in 2020 was 254 meters, down from 264 meters in 2019 (which was a 20-year record high at the time).

### Interpretation

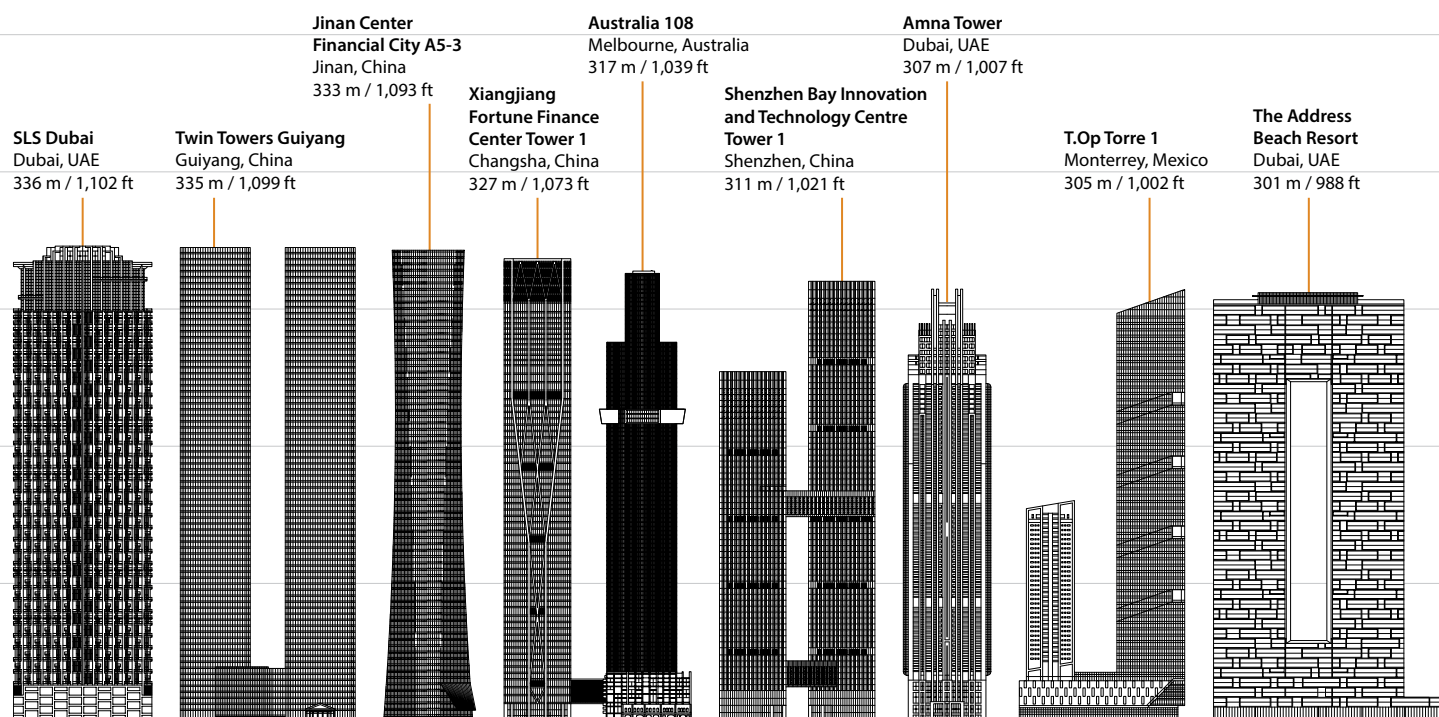
As mentioned above, it is reasonable to assume that far more projects were affected by the COVID-19 pandemic than the nine projects CTBUH was able to confirm. Yet this

is also the second year in which a decline in the number of completions was recorded, so COVID-19 is not the only cause. Individual cases of financial difficulty happen each year, as do conflicts with local citizen groups or governments over zoning or other permissions. Warfare, while less common, was in 2020 implicated in at least one project, (Baku Tower, Baku, Azerbaijan), not completing on schedule.

While the revelation of new strictures against tall buildings exceeding 500 meters in China made headlines earlier this year, it is not likely to have affected the 2020 total, which is only one building less than was completed in 2019. The more prodigious drop in production of 200-meter-plus buildings, from 92 to 57, had already occurred between 2018 and 2019. Nevertheless, the combination of earlier directives counseling against “oversized, xenocentric, and weird” buildings issued in 2016, as well as subsequent local height restrictions, have likely conspired to slow the march of exceedingly tall building construction in China, compared to the peaks reached mid-decade.

On the positive side, however, United Arab Emirates is seeing a resurgence, recording more completions (12) than in any year since





2011 (14). The UAE had nine completions in 2019 and 10 in 2018. Considering that the US records were 14 completions in both 2018 and 2019, and the relative sizes of the two economies, this is an impressive output by any measure.

“The United Arab Emirates is seeing a resurgence, recording more completions (12) than in any year since 2011 (14).”

#### Predictions for 2021

Based on current counts, CTBUH predicts that between 125 and 150 buildings of 200 meters’ or greater height will be completed in 2021. Of these, between 14 and 30 will likely be supertalls.

Looking at the top 30 projected completions in 2021, 18 are in China, five are in the United States, and three are in Saudi Arabia. All of the buildings coming online in Riyadh in 2021 are part of the massive King Abdullah Financial District (KAJD), which will comprise some 50 buildings upon completion, though it would be pure speculation to estimate a completion date for the entire complex. In any case, 11 will have completed by the end of 2020, and its signature landmark, the 385-meter PIF Tower, will be among the Class of 2021. Notable regional highlights include the Central Asian cities of Baku, Azerbaijan, where the war-delayed Baku Tower looks set to

complete in 2021; and Nur-Sultan, Kazakhstan, where Abu Dhabi Plaza is likely to complete. Both of these would become the tallest buildings in their respective countries.

It is reasonable to predict that COVID-19 will affect investment and construction for some time to come. It is already the case that some projects expected to have completed by the end of 2021 and being moved to 2022, including the 644-meter Merdeka PNB118 in Kuala Lumpur, a change that its developers have directly attributed to Malaysia’s Movement Control Order, which the country issued in response to the pandemic.

Having said this, it is notable that the two tallest buildings estimated to complete in 2021, Riverview Plaza A1, Wuhan (436 meters), and 111 West 57th Street, New York City (435 meters), are in the two cities that

were, by many measures, hit hardest and earliest by the 2020 pandemic. This could be taken as a symbol of the resilience of cities and the tall building industry as well. It is also possible that the availability of vaccines and other positive developments in the battle against the pandemic will restore full momentum by mid-year, which gives CTBUH additional confidence in the predicted range of 125 to 150 completions for 2021. ■

See the interactive data report at: [skyscrapercenter.com/year-in-review/2020](https://skyscrapercenter.com/year-in-review/2020).

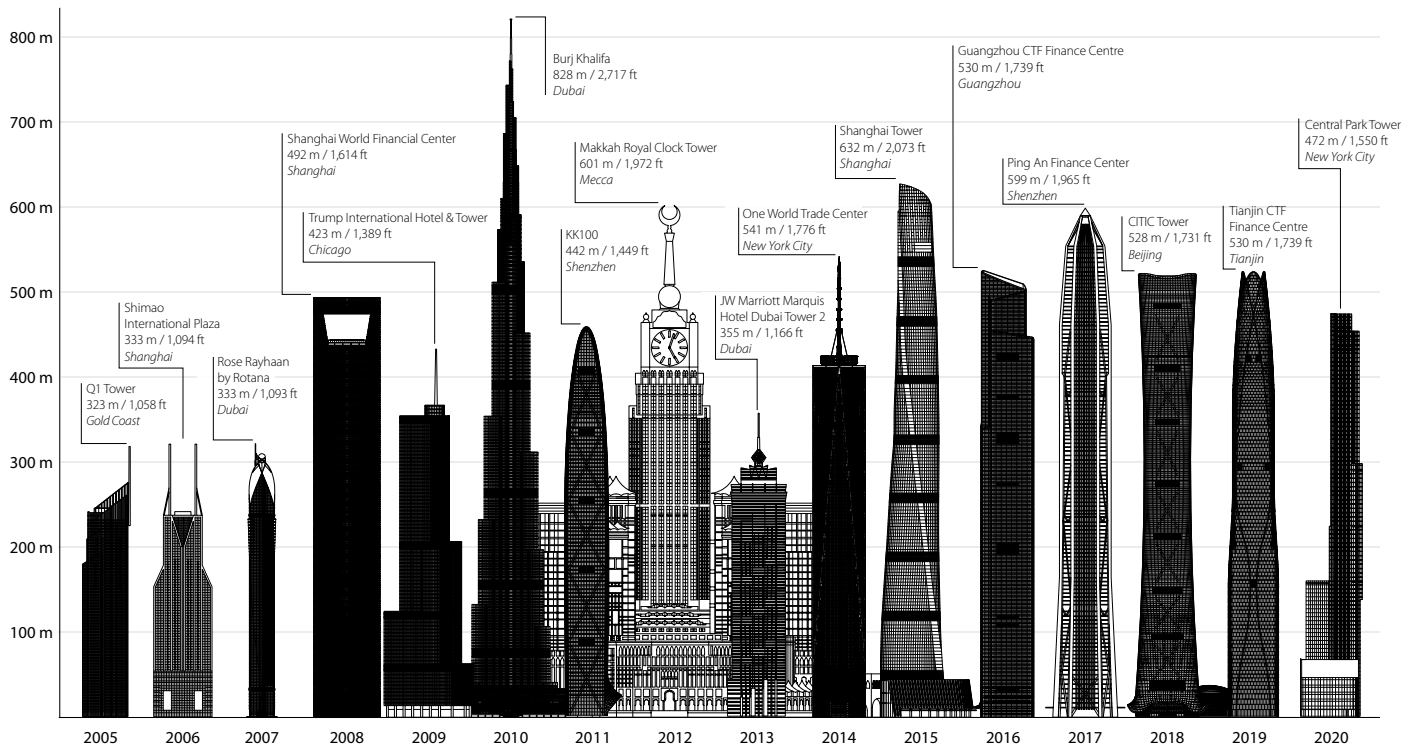
## Tall Buildings in Numbers

# The Global Tall Building Picture: Impact of 2020

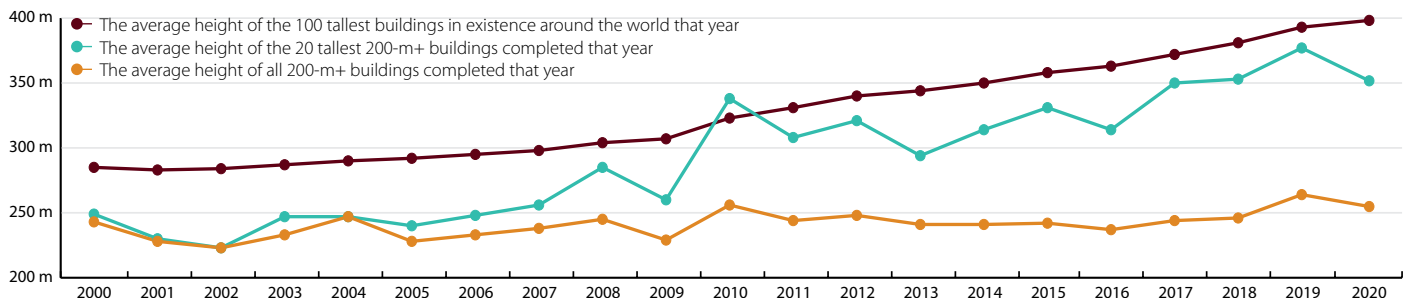
The tall buildings completed in 2020 have pushed the global average height of the 100 tallest buildings to 399 meters. Across the year, 14 buildings entered the list of the world's 100 tallest, down from 17 in 2019, but equal to the 2017 total. Prevailing trends in the tallest 100, towards the regional dominance of Asia and the prevalence of mixed-use function and composite construction, have continued.

### World's Tallest Building Completed Each Year

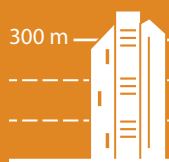
Starting with the year 2005, these are the tallest buildings that have been completed globally each year.



### The Average Height of the Tallest Buildings



**New York City** had the **two tallest buildings** to complete in 2020. One city has had the two tallest completions only 10 times in history.



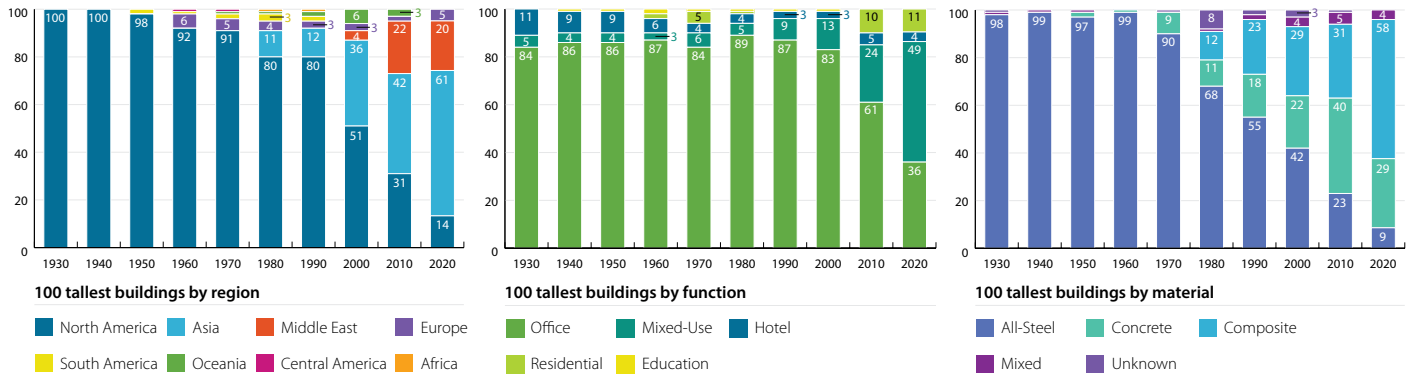
The 20 tallest buildings to complete in 2020 are all **supertalls**, repeating 2019's first-time record.

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**London** completed four buildings over 200 meters in one year, for the first time ever.

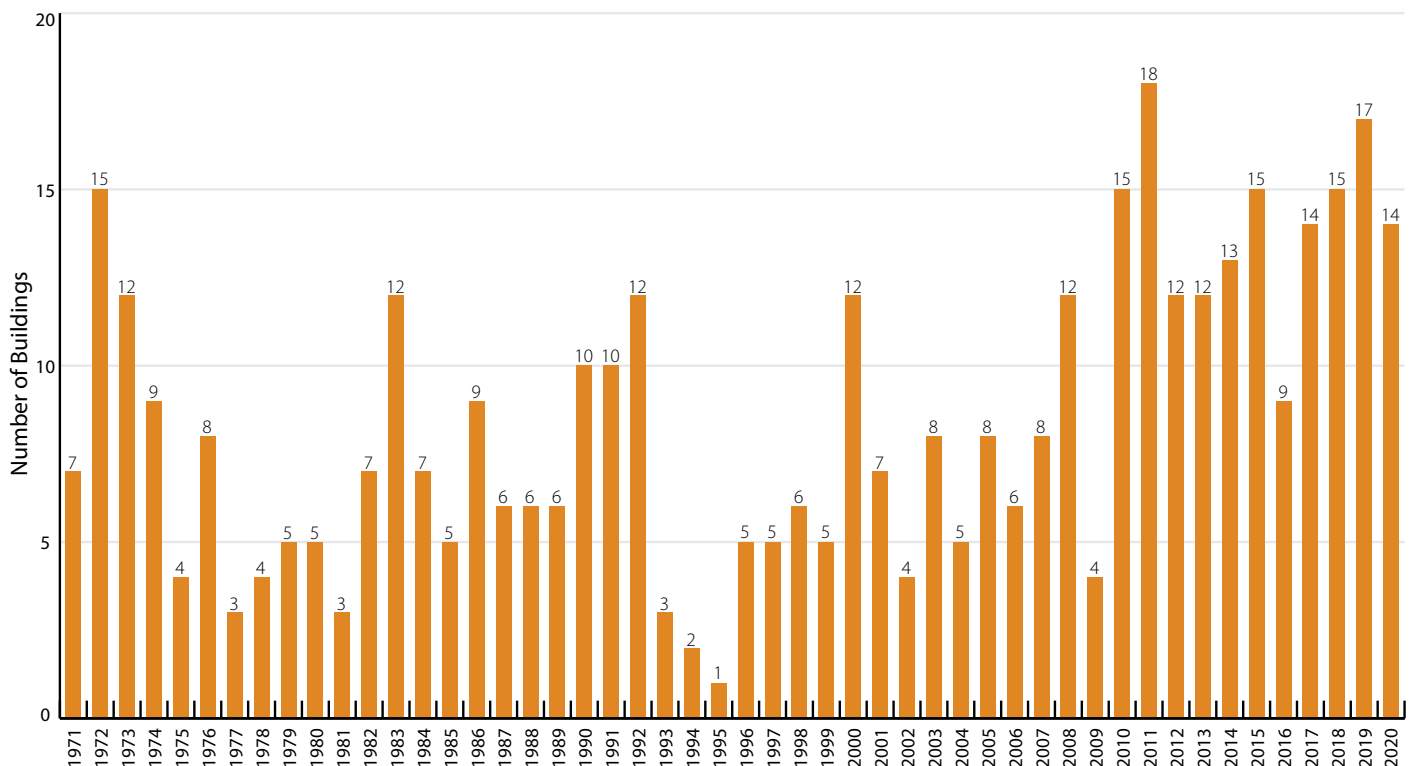
## World's Tallest 100: Analysis

A plurality of the world's tallest 100 buildings 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 14 buildings entered the 100 tallest list in 2020, down from 17 in 2019, and below the all-time record of 18 in 2011.



**T.Op Torre 1** in Monterrey is Mexico's first supertall.

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No buildings over 500 meters completed, the first time since 2014.



Mumbai and India got a new tallest building, **World One**, rising to 280 meters.