CTBUH 2021
International Conference

THE FUTURE CITY

Addressing Carbon, Climate & Societal Crises

Post-Conference Report

Kindly Sponsored by KONE

Council on Tall Buildings and Urban Habitat

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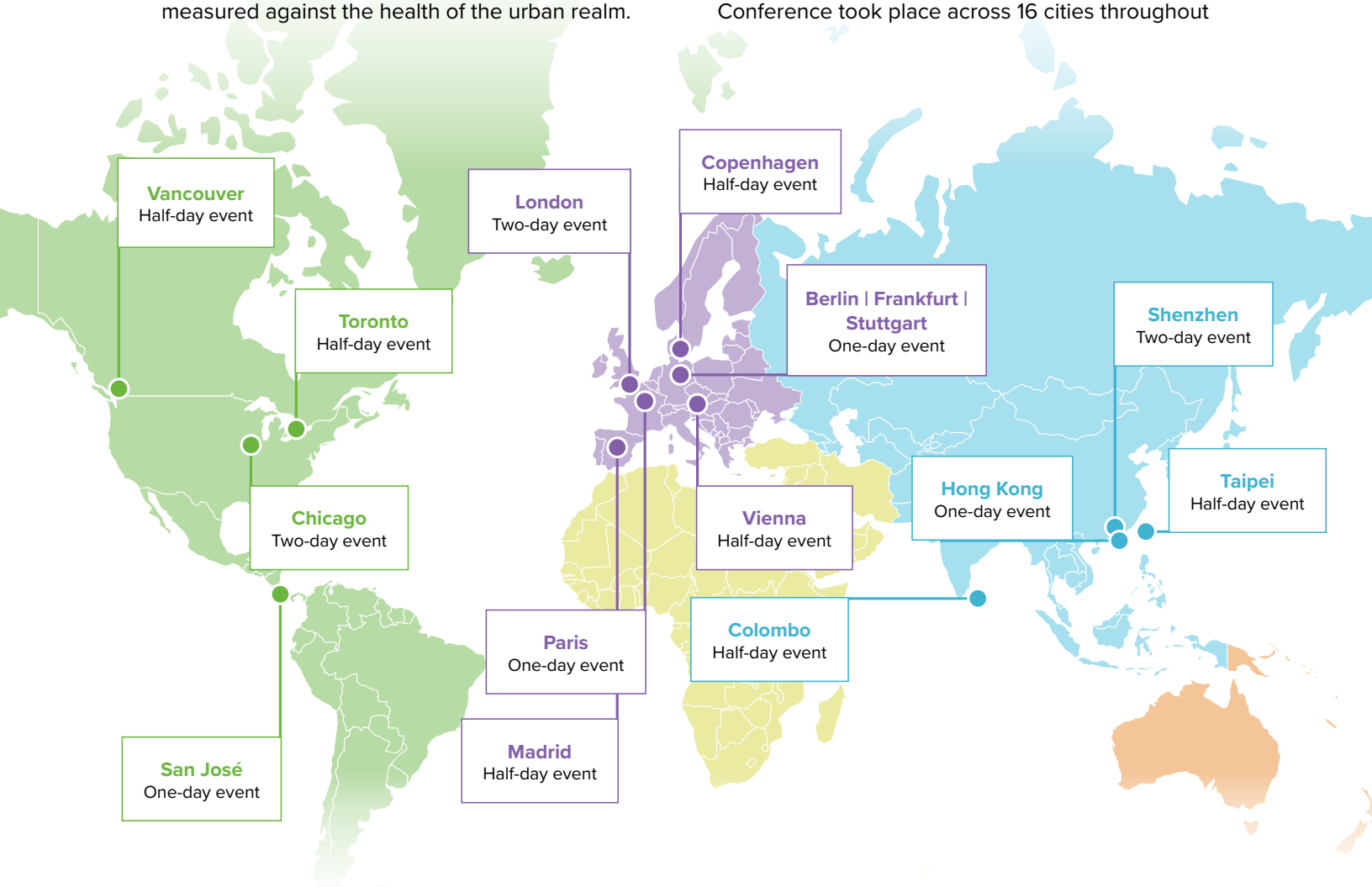
The Future City: Conference & Context

The Conference

As the world adapts to the evolving COVID-19 crisis, a new template for the kinds of cities we need is developing, one that requires more flexibility in the way homes and workplaces are designed, and more intentionality in how healthy living is supported. Critical decisions grappling with the carbon footprint of the built environment must be made, with their effectiveness measured against the health of the urban realm.

Most crucially, a new appreciation has formed for human-scale details as the key ingredient to a thriving and resilient city.

CTBUH delivered its international conference in person, through the central themes of Carbon, Climate, Society, and The Future City. These discussions transcended a single location, as issues of this scope affect regions around the world in contextually-unique ways. The 2021 Conference took place across 16 cities throughout



The 2021 Conference took place across 16 cities in November, in many different operating conditions, underscoring the global nature and resiliency of the CTBUH organization.

Worldwide Photo Gallery

Chicago: Attendees listen attentively to the opening plenary in the Forum at 110 North Wacker.

Shenzhen: Jianping Gu, general manager, Shanghai Tower Construction & Development, addresses the audience at One Shenzhen Bay's Sky Concert Hall.

Paris: Part of the day included a walk through the La Manufacture Design facility in the Bruneseau district.

Copenhagen: The sleek Fredericia Furniture Showroom played host to the Scandinavian edition of the conference.

Shenzhen: The Ping An Asset Tower, one of two off-site programs, drew interested gazes upward.

London: Attendees enjoy the view from The Leadenhall Building off-site program.

Hong Kong: sky100, International Commerce Centre, provided great views and a great venue for exchanging viewpoints.

AMERICAS

Chicago

Keynote Address

The room buzzing with excitement at reuniting in person for the first time since 2019, the CTBUH 2021 International Conference event in Chicago took place in the Forum, the third-floor event space at the newly constructed 110 North Wacker in Chicago. The day's proceedings were launched with a welcome from Anthony Scacco, chief operating officer of Riverside Investment & Development, the venue's owner, and CTBUH CEO Antony Wood. The former remarked on the central role buildings play in safeguarding the well-being of occupants. "Many of us in the investment, design, and construction space have sought new innovations to help our projects be better stewards of their environment," Scacco said. "But one thing that's become much clearer as a function of the COVID-19 pandemic is the critical role that buildings play in stewarding the daily lives of their occupants."

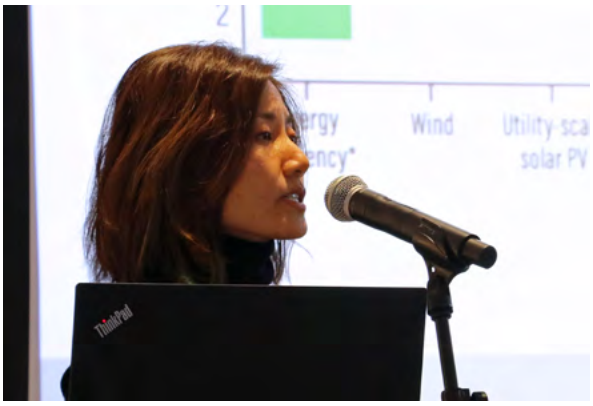
During his keynote address, City of Chicago Commissioner of the Department of Planning and Development, Maurice Cox, took up the thread of the responsibilities of the built environment, discussing the impact of public policy on urban habitats and the entrenchment of inequity. "We see a direct connection between the inequity that has been perpetuated over the years, and our ability to be resilient," Cox said. He discussed the city's core principles in regard to planning, equity, and resilience, the metrics being used to start measuring progress, and key development programs.

Commissioner Maurice Cox of the Department of Planning and Development, Chicago, delivered the keynote address to the Chicago edition of the 2021 conference. Cox illustrated how the zoning bonuses awarded to exemplary high-rise projects in the city core could result in construction of affordable housing and reinvestment in outlying areas.

Core Track

Moderated by Don Davies, president of Magnusson Klemencic Associates, the first session covered the opportunities and challenges faced in meeting carbon goals in the architecture, engineering, and construction (AEC) industry. One place to begin is reducing waste in construction, where more than 30 percent of materials on a project are wasted. Cutting out waste in energy generation and driving energy efficiency further are other key areas, said Nora Wang Esram, senior director for research at the American Council for an Energy-Efficient Economy. Only 14 percent of energy extracted from the environment is used to generate useful work, with most of it going to waste. “We need to optimize performance and improve energy productivity,” she said. Representing the materials side of the conversation, Dave Miracle, director of sustainability at Nucor Corporation, and Stanley Yee, façade design and construction scientist at Dow, discussed how their companies were reducing embodied carbon in their products. Freya Burton, chief sustainability officer with LanzaTech, discussed using gas fermentation to reuse waste products.

In an energized panel discussion, Shelley



Nora Wang Esram, senior director for research, American Council for an Energy-Efficient Economy, shares how practitioners can create “Buildings for a More Productive and Lower-Carbon Economy.”

Venue Highlight

110 North Wacker, Chicago
Height: 249 m / 817 ft
Completion: 2020

Hosted by the building owners and conference Diamond sponsor, Riverside Investment & Development.

Located along the South Branch of the Chicago River, 110 North Wacker was constructed upon a trapezoidal site, presenting design challenges in creating desirable lease spans, while accommodating for a publicly accessible riverwalk of at least 9.1 meters (30 feet) in width, as required by city ordinance for any riverfront development site.

After the close of the educational sessions, delegates gathered on the 55th floor overlooking downtown Chicago for a lively networking reception.

ASIA

Hong Kong

As the local conference edition took place in the extraordinary sky100 observation deck at the top of the International Commerce Centre (ICC), Hong Kong's tallest building, it is perhaps unsurprising that the event was thoroughly sold out at the venue's 200-person capacity. The content of the presentations matched the caliber of the venue.

Sustainable and Low-Carbon Tall Buildings

In the first session, "Sustainable and Low-Carbon Tall Buildings," James von Klemperer, president and design principal, Kohn Pedersen Fox Associates, offered multiple strategies for designing for a sustainable future, using the example of numerous of his firm's projects as exemplars. Buildings including South Almaden Boulevard in San Jose, United States; 601 West Pender Street in Vancouver, Canada; and Sequis Tower in Jakarta, Indonesia stand to report between 70 and 80 percent reductions in energy use intensity (EUI) compared to their peer conventional structures in those markets, von Klemperer said.

Echoing this theme, Lewis Lam, deputy general manager, Sun Hung Kai Properties Limited, observed that continuing investment in the Internet of Things (IoT) and other "smart" technologies will decrease ICC's EUI by 30 percent.

The sky100 observation deck atop the International Commerce Centre was filled to capacity for the CTBUH conference.

In the day's first session, (left to right) Lewis Lam, deputy general manager, Sun Hung Kai Properties Ltd; Raymond Yau, general manager, technical services & sustainable development, Swire Properties Ltd; and Eric Law, key accounts & business development director, Schindler, take audience questions.

ASIA

Shenzhen

Sky, the world's highest concert hall, located atop One Shenzhen Bay Tower 7 at 341 meters, resonated with the sounds of quality content and determined conversation on 11 November 2021. This was the occasion of the Shenzhen edition of the CTBUH 2021 International Conference, a particularly significant event that extended into off-site programs on the next day.

A full house at Sky, the world's highest concert hall, hears opening remarks from Zhouwen Chen, executive director & senior vice president, Shenzhen Parkland Real Estate Development Co., Ltd.

Humanizing High Density

In the day's first session, developers and architects elaborated on the need to face the future with principles of ecological renewal and sustainable development, discussing case studies that introduced novel solutions towards humanizing density and promoting the industry's forward-looking exploration of the future of urban development.

Zhizhe Yu, co-founder and managing director, AI PlanetWorks asks the audience, "Do we still need density? Or cities?"

Characterizing the general outlook of the session, Zhizhe Yu, co-founder and managing director, AI PlanetWorks, provocatively asked, in the context of a global pandemic still ongoing, "Do we still need density? Or do we even need cities?" And yet, "We know that the earth is not flat, and that space is running out. So why do we limit ourselves to thinking about cities in only two dimensions?" Yu demonstrated several approaches to thinking more three-dimensionally and humanistically, referring to projects such as the Ping An Asset Tower, which would later host an off-site program. In an effort to make the ground plane more inviting, the design team lifted the mass of the building to break down the scale and admit pedestrian access from several levels and angles, including the local footbridge network. This made

> **"We know that the earth is not flat, and that space is running out. So why do we limit ourselves to thinking about cities in only two dimensions?"**
>
> – **Zhizhe Yu**
> *Co-Founder and Managing Director, AI PlanetWorks*

the building double as a shading canopy and public meeting place, even for those without business inside. An enticing light sculpture enhanced the lifted mass' underside at night.

Equally unhesitant in her diagnosis, May Wei, APAC office leader, Shanghai office director and principal, CallisonRTKL, defined ours as the "Era of Anxiety" around the overlapping epidemic, inflation, and supply chain crises. But she countered that this was also a ripe opportunity for crafting humanistic designs, which could lead to lower anxiety and higher productivity alike. Wei worked through examples as diverse as Microsoft World Headquarters outside Seattle, the Beijing Dongzhimen Xinda Center, and CIMC Shenzhen Qianhai West Tower, noting how, even in complicated urban projects, issues of access to greenery, transportation, and a diversity of spaces are resolvable as long as key principles are borne in mind from the outset of design.

Sustainability and Technology-Driven Design for Tall Buildings

The focus of the day's second session was on how to use new technology to seek a balance between commercial demands and ecological urbanism, under the goal of sustainable development.

Venue Highlight

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One Shenzhen Bay Tower 7, Level 71 Sky Concert Hall, Shenzhen
Height: 341 m / 1,120 ft
Completion: 2018

Hosted by the building owners and conference Diamond sponsor, Shenzhen Parkland Real Estate Development Co., Ltd.

One Shenzhen Bay Tower 7 is the tallest building in the One Shenzhen Bay complex, an eight-tower development in the Houhai CBD section of Shenzhen. The mixed-use development opened in phases beginning in 2014 and concluding in 2018. A CTBUH Research Project in 2018 confirmed that Sky, the concert hall located on the top floor of Tower 7, is the world's highest such facility.

EUROPE

London

The program of the London edition was particularly strong, taking place at the remarkable 22 Bishopsgate, the second-tallest building in the city and in the UK. Hosted by the building owners and conference Diamond sponsor AXA Investment Managers, delegates spent most of the two-day program on the 55th floor, with spectacular views providing inspiration.

Appropriately enough, introductory remarks came from CTBUH Chairman Steve Watts, partner, alinea Consulting, and James Goldsmith, head of leasing at AXA Investment Managers. Watts recounted that it seemed a very long time since the last time CTBUH had a global gathering, in 2019, Chicago, for the 10th World Congress, both in terms of time and the way in which the atmosphere had changed due to the onset of the COVID-19 pandemic. He warned against complacency in the face of climate change, however close to front of mind the pandemic continues to be for most people.

Panel Discussion on the Future of London: Mobility, Skyscraper, and Society

Chaired by Peter Wynne Rees, Professor of Places, Faculty of the Built Environment at the University College London, a stellar panel took on the biggest issues facing the city today: an ever-more expensive environment that is becoming harder to live in and navigate.

Andrew Jones, program director, Europe for AECOM, observed that the UK, with London comprising fully half the national output, is the most unequal country in Europe, outpacing even the West Germany of the Cold War era. The unaffordability of housing means long commutes, which strains infrastructure and subverts zero-carbon goals. Jones advocated the city move to a more “mesh”-like transport system that acknowledges its increasing polycentricity.

A provocative, not to say chilling, observation came from Harbinder Singh Birdi, partner and infrastructure sector lead at Hawkins\Brown, who lucidly described the conundrum of a metropolis with great wealth but little political will. “If we want to build more infrastructure, we would need to raise our council tax by 300 pounds per person,” he said. Although he is in support of building a better environment for pedestrians, Birdi noted the implications of poor execution: “Imagine a kid is going to school on a rainy day, and not being able to park less than 100 meters from the entrance. In 20 years’ time she becomes prime minister—what is she going to think or change about previous policies?”

Likewise Rees cautioned against making bikes too available in the wrong places. Already many

Peter Jackson, managing principal, Europe practice leader, Skidmore, Owings & Merrill, takes the stage for "Mobility, Skyscraper, and Society."

> **"The City is back and it's kicking; and when it's kicking, you don't want to be in the middle."**
>
> – **Peter Wynne Rees**
> *Professor of Places and City Planning, University College London*

people ride bikes on what are supposed to be pedestrian walkways. "London won't survive if people get off public transport onto two wheels and then go into the pedestrians' public realm," he said.

The UK Future: Interview with Ian Simpson

Ian Simpson, founding partner and principal, SimpsonHaugh, sat for an interview with William Murray, founding partner and director, Wordsearch Place. In some ways the conversation turned into a walking billboard for Manchester, the UK's second-largest city, from which Simpson hails. He noted how much more difficult London was to build in, with its 32 boroughs all having different policies, while less economically vibrant cities across the country are calling out, "please build here!" He noted that One Blackfriars took 15 years between entering the planning process and starting construction, while a similar tower in Manchester took nine months.

Panel Discussion on Building the City's Tallest, 22 Bishopsgate

In this session, attendees got a real flavor for the thought and effort invested in the building they were occupying. David Healy, director, and Diego Padilla Philipps, associate director, WSP, detailed the meticulous process of reusing the pile foundations of the abandoned Pinnacle project

Venue Highlight

22 Bishopgate, London
Height: 278 m / 913 ft
Completion: 2020

Hosted by AXA Investment Managers, one of the developers of the building.

This office building is the tallest in the City of London financial district and second-tallest in London overall. Built for 12,000 workers, 22 Bishopsgate has a steel frame built around a central supporting concrete core. The floor slabs are composite with cellular steel beams, providing a diaphragm-action restraint to the perimeter columns. There are three column positions on either side of the core to act as outrigger lateral stability structures. These outriggers, contained within two plant room floors, are connected to the core through story-deep trusses. Its faceted setbacks give it a substantial presence on the skyline.

EUROPE

Stuttgart

D1244 – The World's First "Adaptive" Skyscraper

The world's first adaptive high-rise, D1244, has recently been constructed at Institut für Leichtbau Entwerfen und Konstruieren (ILEK), on the campus of the University of Stuttgart. Scientists there are investigating under real conditions, on a scale of 1:1, how buildings can actively adapt to changing environmental influences. The prototype is part of the Collaborative Research Center's "Adaptive Shells and Structures for the Built Environment of Tomorrow" project.

The unique feature of this building is the integration of active elements into the load-bearing structure and the façade. An interplay of sensors and actuators makes it possible to respond to the vibrations in the tower caused by the wind, for example, by means of an intelligent control system. Sensors record any deformations that occur, while hydraulic actuators ensure that the deformations are counteracted by forces in the supporting structure. At the same time, this also serves to dampen vibrations, making it possible to build much lighter than would be possible without adaptivity. During the course of the CTBUH Conference event in Stuttgart, the concept of adaptive load-bearing structures was explained. Afterwards, attendees visited the tower and were able to inspect the elements directly.

Attendees gather at the base of D1244.

View of the D1244 tower at the University of Stuttgart. The tower is fitted with numerous sensors and adaptors that allow it to make finite adjustments to changing conditions. © University of Stuttgart/ILEK

Roland Bechmann, managing director & partner, Werner Sobek AG (left), and Lucio Blandini, managing director, Werner Sobek AG, address attendees from the top of D1244.

CTBUH 2022 INTERNATIONAL CONFERENCE STATISTICS

Conference in Numbers

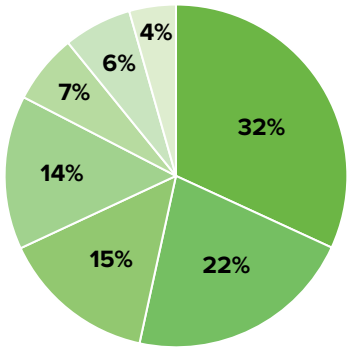
Conference Statistics

Numbers Across All Events

1,522 Delegates	Companies **589**
203 Presenters	Sessions & Activities **81**
42 Sponsors	Global City Hosts **16**

ONE GREAT CONFERENCE!

Attendance by Discipline



- Architecture / Urban Planning / Interiors
- Engineering Companies
- Owners / Developers / Occupiers / Property Managers
- Material / System Suppliers
- Government/ Academic / Institute / Research
- Contractors / Project Managers / Cost Consultants
- Other

Top 10 Architecture / Urban Planning / Interior Designers (Based on number of delegates attending across all cities)

1	Skidmore, Owings & Merrill	22
2	Studio Gang Architects	21
=3	Goettsch Partners	14
=3	Tianhua	14
=5	bKL Architecture	13
=5	Gensler	13
=7	Kohn Pedersen Fox Associates	11
=7	PLP Architecture	11
9	Ortiz León Arquitectos	10

*Logos indicate conference sponsors

Total architects / urban planners / interiors in attendance: 485 people; 170 companies

Top 10 Owners / Developers / Occupiers / Property Managers (Based on number of delegates attending across all cities)

1	Hongkong Land	17
2	JLL	13
=3	Riverside Investment & Dev.	8
=3	Sun Hung Kai Properties	8
5	CITIC HEYE Investment	7
=6	AXA Investment Managers	6
=6	Grosvenor	6
=6	Shanghai Tower C&D	6
=6	Yuexiu Group	6

*Logos indicate conference sponsors

Total owners / developers / occupiers / property managers in attendance: 223 people; 99 companies

Thank You to the CTBUH 2021 International Conference Sponsors

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About CTBUH

The Council on Tall Buildings and Urban Habitat (CTBUH) is the world's leading non-profit organization for all those interested in the future of cities. It explores how increased urban density and vertical growth can support more sustainable and healthy cities, especially in the face of mass urbanization and the increasing effects of climate change worldwide.

Founded in the USA in 1969, the CTBUH member network embraces more than a million professionals working in all building industry sectors in almost all countries of the world. With offices in Chicago, Shanghai, and Venice, the Council runs hundreds of multidisciplinary programs across the world each year, through its regional chapters and expert committees; its annual conferences and global awards program; through funded research projects and academic collaborations; and via its extensive online resources and physical outputs.

The Council is perhaps best-known to the public as the arbiter of tall building height and the global authority that bestows titles such as "The World's Tallest Building." Operating on a global scale, the CTBUH serves as a platform for both cutting-edge information-share and business networking for all companies and professionals focused on the inception, design, construction, and operation of cities, and the buildings they comprise.

Learn more at **CTBUH.org.**