

Should the UK embrace wooden skyscrapers?

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Experts reveal the advantages and challenges of building timber towers in city centres



Tokyo is planning to build a 1,148-foot wooden skyscraper by 2041 [Sumitomo Forestry Co.]

The sight of timber ‘plyscrapers’ jostling next to the Gherkin and the Walkie-Talkie sounds farfetched. Indeed, many investors reacted with scepticism to last week’s news that planning managers at the City of London were mulling the idea of permitting wooden skyscrapers to be built in the Square Mile.

How would the safety and longevity of a wooden skyscraper compare to one made from metal and glass? Would such towers come with equally sky-high insurance premiums?

The [City of London Corporation](#) said that it still has to investigate several factors before any decision is made, not least the fire safety level in wooden buildings of great height.

But we may be closer to a future of timber towers than it seems. Wooden buildings are now in construction all over the world, from Norway to Singapore and the US. They range from fully wooden mid-rise structures to vaulting hybrid

buildings, such as the 40-storey Atlassian headquarters in Sydney, which will have an internal timber structure with a steel and glass exoskeleton.



The Atlassian headquarters in Sydney is set to be the world's tallest hybrid timber building

And there are in fact a few recently completed timber structures in the UK, such as the 28m tall Believe in Better building on Sky's campus in Osterley, west London, and the 30m tall Stadthaus residential building in Hackney – though these are of course of a far smaller magnitude to the ambitious towers floated abroad.

Is it only a matter of time, then, before the UK embraces wooden skyscrapers? Or will concerns over fire safety and wary investors mean they struggle to win favour here?

React News spoke to architects, developers and investors to find out.



The 28m Believe in Better building at Sky's campus in Osterley was the tallest commercial timber building in the UK on completion in 2014

'There's a lot to be figured out'

Ron Bakker, founding partner at PLP Architecture, was delighted by the news from the City of London planners. Six years ago his research project with PLP and Cambridge University proved the potential for a wooden skyscraper in central London. It was called Oakwood Timber Tower: a concept for a 1m sq ft building with more than 1,000 flats that could in theory rise from the Barbican centre.



Oakwood Timber Tower, PLP's vision for a wooden skyscraper in central London [PLP]

“The aim of that exercise was to see whether timber could be used for very tall buildings,” Bakker tells *React News*, “and I don’t think we are there yet. There’s a lot to be figured out.”

However, there have been significant developments in the intervening years. There has been a surge in the use of cross-laminated timber (CLT) – the layering, glueing, and pressing together of wood into 50cm thick laminated planks – to build low-rise offices and residential buildings, and far more research into the structural properties of timber as a construction material.

Bakker is aware that fire safety may be a more complicated issue in the UK, where the Grenfell tragedy casts a dark shadow, than it is in Europe. “It is a different discussion in Europe than it is in this country.

“For obvious reasons, [here] it’s close to our hearts... In Europe, fire departments in cities don’t look at timber any differently as they look at concrete and steel for structures.

“It’s entirely clear that you shouldn’t build residential buildings with a combustible facade,” says Bakker. “It was never a good idea and it’s still not a good idea. But structure’s different.”

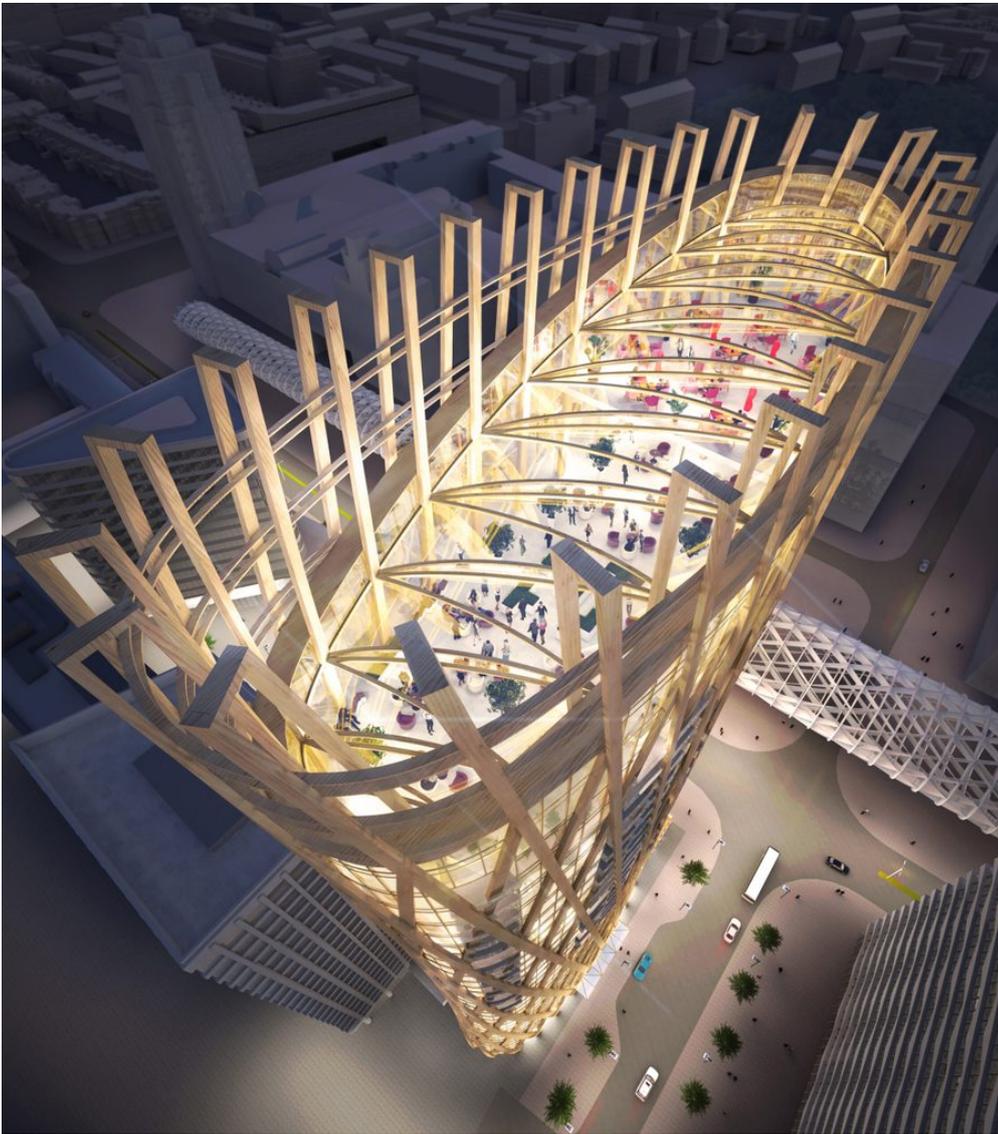
Building with wood actually has some fire safety benefits. “The outside will catch a little bit,” but beyond that wood tends to char and “make an insulating layer,” slowing the spread of fire to the internal structure.

• **Timber buildings: the advantages**

- • Timber is the only renewable structural material. If used correctly, it has a negative carbon count, because each time it is used in construction it captures and holds on to some carbon
- • Studies suggest working with wood speeds up the construction process and can even reduce stress levels of a building's inhabitants
- • Assembly is cleaner and quieter than building with concrete, with no need for cement mixers
- • Prefabricated timber structures are light and easy to transport around cities
- • According to PLP's Oakwood Tower concept, a wooden tower as high as 300m could be built
- • Timber buildings could make use of softwood from forests in Europe, Canada and Russia that were planted for the paper industry and are now no longer needed

How tall timber performs in a real fire scenario, including whether burnout occurs, remains too little explored, according to a March 2020 paper by the University of Edinburgh School of Engineering.

“The case for wood is not more difficult than the case for steel [or] for concrete,” says Bakker. “We are currently so concerned with fire and buildings [in the UK] that we tend to lean to the other direction and just say no, and that is not happening in other parts of the world.”



The Lodge, another wooden skyscraper concept in Rotterdam designed by PLP [PLP]

In North America the use of timber as a structural material for low-rise buildings “is going very, very fast.” In France, “every government building now has to, by law, use a certain percentage of wood for their sustainable structural materials.”

In the UK, though, “it’s the blanket legislation that seems to stop progress at the moment,” says Bakker. The wooden towers debate, then, is “an important discussion to have because of the opportunities.”

A forest of wooden offices in Paris

If you want a taste of the future, look to Europe, where wooden building funds are taking off. For example, in July 2021 *React News* revealed that [Australia’s Cromwell Property Group and Finnish asset manager Dasos had launched a fund](#) that will invest more than €1bn in wooden buildings across Europe in the next three to four years.

Woodeum, a company focused on wood construction, is poised to take advantage of the burgeoning interest in wooden buildings in France. It has already developed two 17-storey residential high rise wooden buildings: Hyperion in Bordeaux and Albizzia in Lyon.

Hyperion is a wooden residential tower in Bordeaux [Woodeum]

Guillaume Poitrinal is the co-founder of Woodeum and also co-founder of Icamap, the group behind Icawood, a low carbon property fund. Icawood owns a 125,000 sq m (1.345m sq ft) [wooden campus development in Paris called Arboretum](#) that will be completed at the end of 2022.

The ex-CEO of Unibail-Radamco confirms to *React News* that the growing interest in wood is currently focused on mid-range buildings (20-35m high), but he and his team are now looking into taller towers. (The tallest wooden tower is currently Mjøstårnet in Norway, which rises to 85.4m.)

Fire safety in such towers remains a significant concern, but “discussions with fire [services] and authorities are progressing well based on real new scientific studies on fire resistance and innovative means to control this issue”, Poitrinal says. Like Bakker, Poitrinal points out that with wood “burning comes late and progresses slowly compared to traditional post and beam structures.”

The growth of developers and constructors is another sign that the wooden market is maturing, says Arielle Polaillon, project manager at Woodeum. Leading French constructors such as Bouygues now have their own dedicated wood divisions.

In 2014, Woodeum began a partnership with Stora Enso, a half-Finnish, half-Swedish company that is the world’s second-largest supplier of wood-based building materials. “To meet the growing demand in CLT, they opened a third

plant in Sweden in 2019, with a production capacity of 100,000 m³ annually,” Polailon says. “And fourth plans will be constructed in the Czech Republic.

“In less than 10 years, Stora Enso has doubled its global production capacity of CLT. It shows that there is a big drive in the industry towards wood and renewable materials.”

- **Case study: Icawood**

- • Icawood is a €750m real estate investment fund dedicated to developing low-carbon offices in Greater Paris
- • There are more than 12 investors in the fund including Ivanhoé Cambridge, Allianz and two sovereign wealth funds
- • Almost two-thirds of the fund has been invested
- • The Arboretum project will use 30,000m³ of wood. It is currently the largest low-carbon office campus under construction (Walmart’s new headquarters in Bentonville, Arkansas will be bigger, but it will not be finished until 2024)

Icawood’s Arboretum development in La Défense, Paris. Five of the seven buildings are primarily made from CLT [WO2]

‘Quieter, simpler, cleaner’ – building in Barcelona

In two weeks’ time, Hines and Henderson Park will began assembling the timber structure of [T3 Diagonal Mar, a five-storey wooden building in Barcelona](#)

with office and student housing space. Assembly of the 3,610 sq m building will take two months, “which is quite a saving versus traditional methods,” Luke Treasure, director of Hines Spain, tells *React News*.

Building with wood in a bustling city centre – Hines prefers to call it ‘assembly’, rather than construction – has obvious advantages. “All the pieces are made offsite and then on site it’s a quieter and simpler construction process,” says Treasure, with a “shorter construction time...[and it is] obviously cleaner. No cement mixers on site.”

The Spanish team is following the blueprints of two wooden offices Hines recently completed in the US. The American team warned Treasure and his colleagues about the issues they ran into when building their timber buildings.

It is “a very different process to what people are used to,” Treasure says. “There’s a lot more offsite work. A lot more background working with the contractors. This offsite work needs to be more precise, too: “in concrete, we have tolerances of centimetres. In timber, we have tolerances of millimetres.”



Hines' T3 Diagonal Mar building in Barcelona [Hines]

A lot of people ask if working with wood saves time, Treasure says. The reality is “it takes about the same amount of time. It just saves time on the site.” Similarly, there is less of a premium in the cost of building with timber than might be expected. “Certainly a couple years ago, I would’ve said it’s more expensive... now the differences have narrowed. Two years ago, concrete was very cheap, whereas **today – not so much.**“

Daniel Chang, Hines’ head of ESG for Europe, told *React News* that interest in wooden buildings has increased from both investors and tenants in the last 18

months. “One of the really big attractions of timber constructions is the ability to address embodied carbon in a very clear way,” Chang says. Indeed, Hines has been looking into the viability of several timber office projects in London.

Treasure says the two US offices “were really successful commercially and leased quickly and above market levels.” Building with wood “is a way, we felt, of tapping into that demand for quality, for wellbeing, for sustainability – for really being able to offer your employees a nice place to work,” Treasure says.



18-storey Mjøstårnet in Norway is currently the world’s tallest timber tower

Why not?

Provided they pass the requisite fire safety criteria, why not build wooden skyscrapers in the UK? The environmental benefits of building with wood are evident, and the City of London encouraging more sustainable building materials can only be a good thing.

Of course, it is worth remembering that the goal should be to reduce our overall carbon footprint. In the case of the City of London, perhaps this means reusing an existing steel or concrete structure could be more efficient than demolishing an existing building to make way for a wooden one. It’s less exciting but it might be just as effective from an emissions viewpoint.

Ultimately, then, the conversation about wooden skyscrapers comes down to a conversation about the purpose of skyscrapers in general. The best skyscrapers have always been striking visions, rather than dull but practical

designs. And a tower made of wood has a visual power that a retrofitted concrete tower does not. It is a bold, flashy declaration of the push to a more sustainable future.

If you're going to build a skyscraper, you want to inspire awe and admiration. The novelty, aesthetic and engineering of a timber skyscraper would do just that.