# Working wood

**OLYMPICS IN JAPAN**
Inspiring stadiums create greater demand for wood

**BUILDING UPWARDS**
Timber on Top gathers knowledge on climate-smart upward extensions

## CLT in the heart of Stockholm

The acclaimed Cederhusen project – Sweden's first entire residential development built with cross-laminated timber frames – is rapidly emerging.

A MAGAZINE FROM SETRA PROMOTING GREEN BUSINESS • ISSUE 1 2021

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» I WANTED TO SHOW HOW THE TRADITION OF BUILDING IN WOOD COULD TAKE ON A MODERN FORM.

EDITORIAL

Setra

**Working Wood** is aimed at Setra's customers and stakeholders in Sweden and abroad, with a view to increasing knowledge about wood as a building material and providing inspiration. The magazine is published twice a year in Swedish and English. **CIRCULATION:** 4,800 copies **ADDRESS:** Setra Group, Box 3027, 169 03 Solna, Sweden. **TEL:** +46 8 705 03 00. **E-MAIL:** workingwood@setragroup.com. **EDITOR:** Linn Treijs. **RESPONSIBLE PUBLISHER:** Lovisa Krebs. **PRODUCTION:** Chiffer AB. **ART DIRECTOR:** Anna-Karin Schröder. **EDITOR:** Iva Stepán. **DESIGN CONSULTANT:** Josefin Tolstoy. **REPRO:** Italgraf. **PRINTED BY:** Åtta 45. **COVER:** Amanda Roberg and Nanita Brar at Cederhusen 2. Photographer: Klas Sjöberg. All unsigned material is editorial. Want to subscribe to Working Wood? Register at www.setragroup.com/workingwood. What would you like to read about in the next issue? Send your suggestions to workingwood@setragroup.com. For more Setra news, visit setragroup.com and follow us on LinkedIn.

SVANENMÄRKET 3041 0001 TRYCKSAK

FSC MIX Paper FSC® C023277

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IMAGE: KLAS SJÖBERG

**KATARINA LEVIN**
President and CEO
of Setra

**GRÖNSAMHET**
We want to do business where everyone prospers – not just ourselves but also our customers, nature and society. When a business profits everyone, we call that "Grönsamhet" – Green profit. We create green profit.

# "Wood construction shows faith in the future"

The desire for extensions, renovations and newbuilds is stronger than it has been for a long time. While our lives have been put on hold during the pandemic, the impetus to invest in houses and homes has only increased – a clear and hopeful testament to our faith in the future, despite the difficult period many of us have been through.

Now the journey back to normality begins, and we in the wood and construction industry have an important role to play in making the recovery green and sustainable. And we have every reason to be hopeful. The opportunity to build smart, beautiful and resource-efficient buildings that are also kind to the planet has never been greater. This growing interest in large-scale wood construction can be seen around the world, indicating that society is ready for a transition.

You are reading the first words of a new magazine focusing on exactly that. The transition to sustainable and circular construction, centred on the only renewable building material – wood. Through Working Wood, our aim is to provide knowledge on how we can build for the future together – in both an efficient and climate-smart way. Hopefully we can inspire more people to become part of the solution. Part of the new green building wave.

Setra

We produce sawn and processed wood products, construction products and bio-products from responsibly managed forests.

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# In brief

NATURE RESERVE GLULAM BIOFUELS

IMAGE: AGNASARK

The viewing tower at the Siljansnäs nature reserve soars 32 metres into the sky. The tower in Dalarna county is built from locally produced glulam and CLT from Setra.

The focus is on nature

**DANIEL BOBERG,**
Architect MSA and co-owner of Agnasark

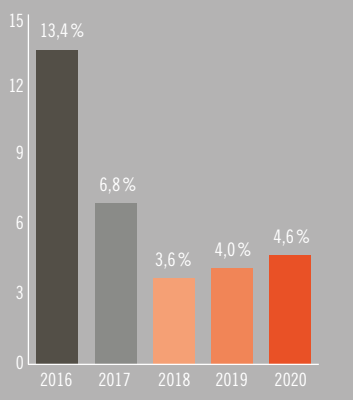
**What is the idea behind the viewing tower in Siljansnäs?**

Making nature and the view the focus of attention. The County Administrative Board wanted to build in wood and by using crosslam and glulam, we've been able to sort out the structure and the surface finish in one go. The exterior of the structure is protected by charred cladding that resembles the bark of the surrounding tree trunks. This gives the tower a rugged exterior, while the interior is all warm and inviting white wood – just like a tree.

## Everyone wants glulam

The thirst for glulam has never been greater in Sweden. Demand is growing both among DIYers and in large-scale construction, where wood is becoming the framing material of choice. Over the past five years, sales of glulam have climbed by almost 40%.

**Increase % per year**




Source: Swedish Wood

IMAGE: BJÖRN LOFTERUD

## Sawdust in your tank

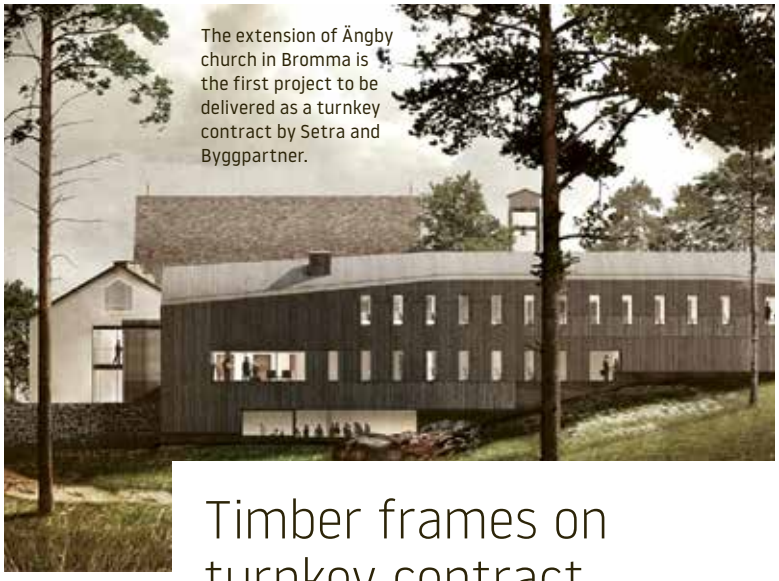
This autumn, production of bio-oil from sawdust will begin at Pyrocell's factory in Gävle. The bio-oil will then become the raw material for renewable petrol and diesel at Preem's refinery. This production system, the first of its kind in Sweden, draws greater climate benefit from the sawdust, as it contributes to the phasing out of fossil fuels. Biofuels emit 80–90% less carbon dioxide than fossil oil. Some 25,000 tonnes of bio-oil will be produced per year, equivalent to the annual consumption of 15,000 cars.

Owned by Preem and Setra, Pyrocell links the value chain from the forest to the tank, with Setra providing the raw material in the form of sawdust while Preem has the refinery.

**WANT TO KNOW MORE?**
**Read about the whole process from forest to tank at pyrocell.se**

# 14%

That's how much apartment block construction in wood is set to increase in 2021, according to a forecast from the Swedish Federation of Wood and Furniture Industry. Timber framing is already being used to build a fifth of all new apartments in Sweden.



The extension of Ängby church in Bromma is the first project to be delivered as a turnkey contract by Setra and Byggpartner.

IMAGE: WITTE SANDELL

## Timber frames on turnkey contract

**Ready to make building more efficient? In a new collaboration with construction firm Byggpartner, Setra is supplying timber frames on a turnkey basis.**

"Having pooled our expertise, we are now able to take responsibility for the entire structure, from design to assembly," says Anna-Lena Gull, Senior Sales Specialist for cross-laminated timber, CLT, at Setra.

A turnkey structural frame simplifies the building process, not least for those choosing wood for the first time.

"This is how the industry is used to working with concrete frames. Now that wood construction is on the rise, many people are asking for a similar approach," says Johan Karlsson, Business Manager at Byggpartner.

Byggpartner operates throughout Central Sweden and has extensive experience of building large projects in wood. This experience is now combined with Setra's efficient production of CLT and glulam in Långshyttan, two hours from Stockholm.

IMAGE: SEMRÉN AND MÅNSSON

## New ICA store with a sustainability profile

A new ICA store built in wood is opening in Sjöbo, southern Sweden, this autumn, delivering a modern take on a market hall. The supermarket will be the first building in a new neighbourhood with a sustainability profile being developed by property owner Melica Invest. In addition to the glulam frame supplied by Setra, the walls, ceiling, facade and interior will all be made of wood.

**DID YOU KNOW ...**

The US has a strong wood building tradition and its own standardised construction system for low-rise housing. The country is a new export market for Setra.

?

# Did you know...

## 100 years

Today there is twice as much forest in Sweden as there was 100 years ago.

## Doubling up

For every tree harvested, at least two new ones are replanted.

## 120 million

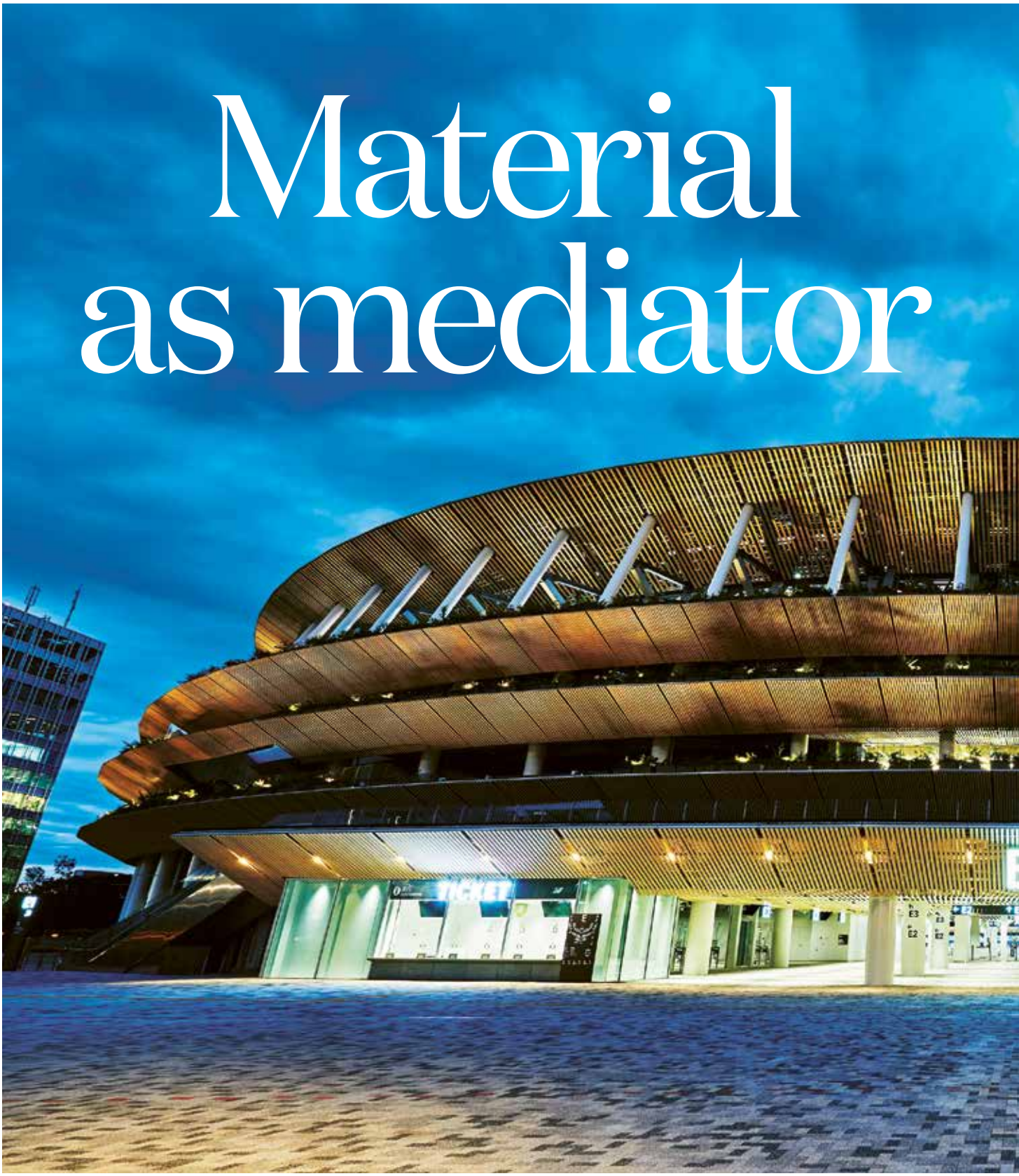
The growth in Swedish forests far exceeds harvesting. Average annual growth is over 120 million cubic metres solid over bark, which is at least 20 million more than is harvested.

Sweden's reforestation obligation requires the forest owner to start planting, sowing or using seed tree stands within three years of harvesting.


PROTECTED FOREST

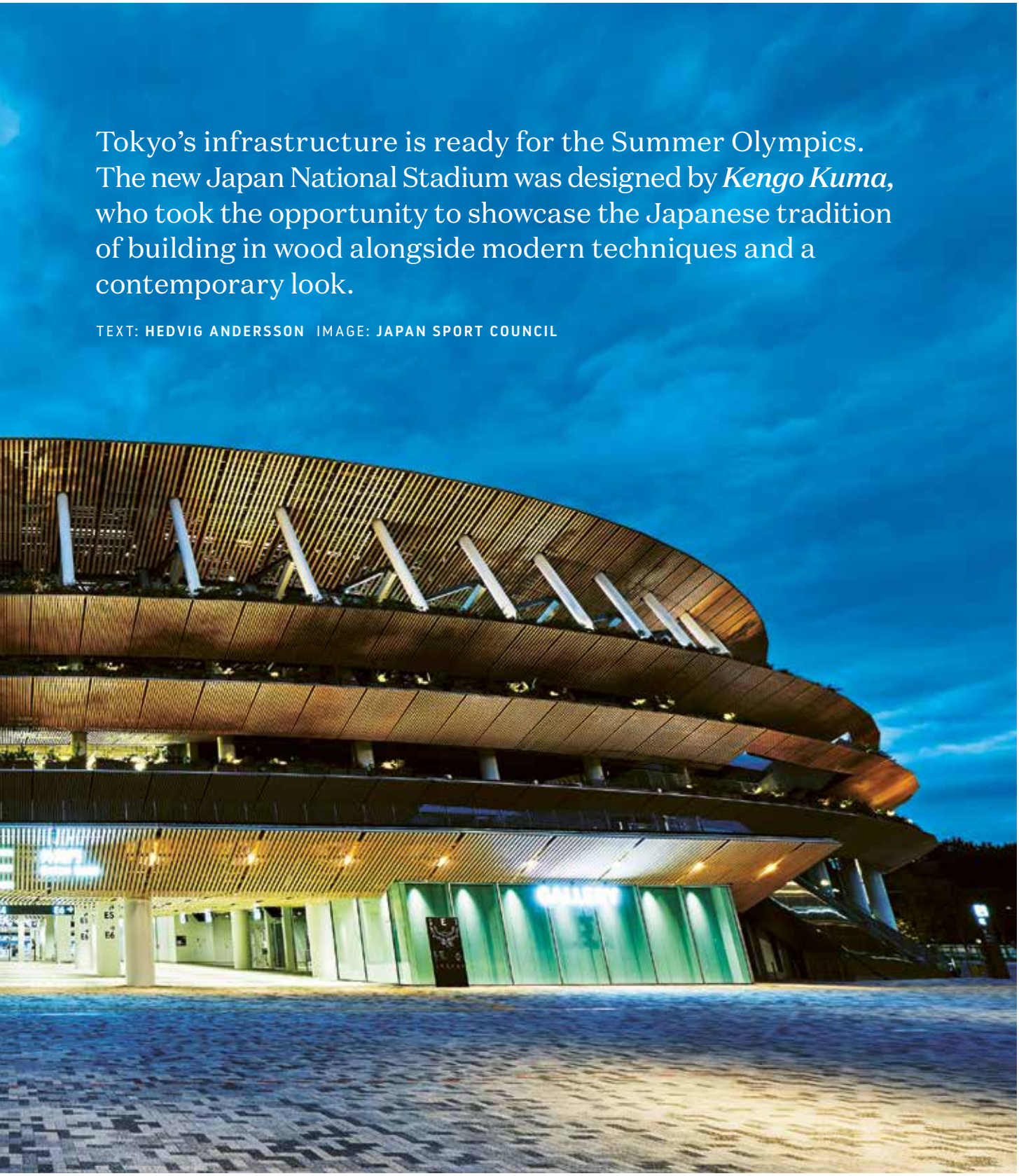
70% of Sweden is covered by forest, around 25% of which is exempted from forestry in various ways. In managed forests, a further 8–10% of the area is left as a general conservation measure at harvest time.

# Material as mediator

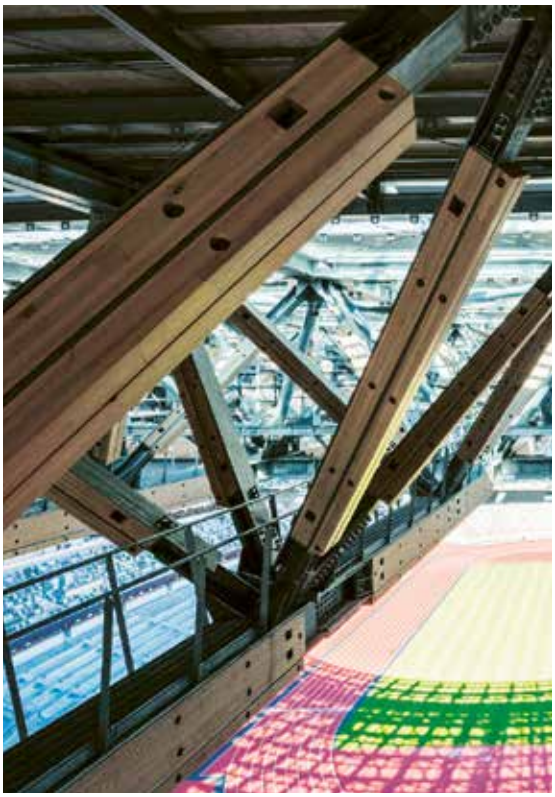


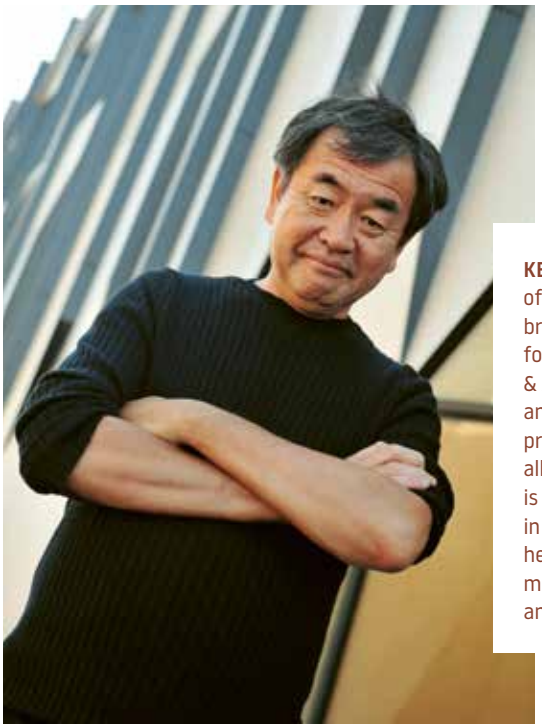
Tokyo's infrastructure is ready for the Summer Olympics. The new Japan National Stadium was designed by ***Kengo Kuma,*** who took the opportunity to showcase the Japanese tradition of building in wood alongside modern techniques and a contemporary look.

TEXT: **HEDVIG ANDERSSON** IMAGE: **JAPAN SPORT COUNCIL**



The larch wood roof and the projecting sections on each floor tie in with the Japanese tradition of building in wood.





**KENGO KUMA** is one of Japan's most celebrated architects. He founded Kengo Kuma & Associates in 1990 and has since taken on prestigious assignments all over the world. Wood is a common material in his architecture, and he describes it as a mediator between man and nature.

In September 2013, it was announced that Japan would host the 2020 Olympic Games. Last March, the decision was taken to postpone the event by a year, but although Tokyo is ready, there is still a lot of uncertainty about whether the Games will actually go ahead because of the pandemic.

Tokyo already had a national stadium built for the 1964 Olympic Games – a stadium that architect Kengo Kuma used to visit as a child with his father and whose light later inspired him to study architecture. Much has changed since then, not least accessibility requirements, and it was decided that a new national stadium would replace the old one. The job went to Kengo Kuma, now one of the country's most renowned architects.

**Kengo Kuma &** Associates has distinguished itself with spectacular buildings all over the world. Among the most notable are the Odunpazari Modern Art Museum in Eskisehir, Turkey, a wooden structure in which interlocking beams are mounted to form cubes that appear to slide in and out of each other, and the Besançon Art Centre in France, where glass and wood give the facade a pattern reminiscent of a chessboard.

Japan has a long tradition of building with wood. Kengo Kuma has described the material as a mediator between people and nature. The Japan National Stadium is a structure made of wood, steel and concrete, with wood playing the main role. The roof of the 100,000 $m^2$ stadium is a lattice of local larch, with a steel and cedar structure behind. Japan is divided

# "THE NEW NATIONAL STADIUM IS AN OPPORTUNITY TO SHOWCASE MODERN CONSTRUCTION TECHNIQUES."

Tomohiko Takahashi, Japan Account Manager at Setra

into 47 prefectures and wood has come from each of them, fitted so that each rib points in the direction of its geographical origin. Larch and cedar are found on each floor in cantilevered sections that protect the terraces from sun and rain.

"The new National Stadium is an opportunity to showcase modern construction techniques along with the Japanese tradition of building with wood," says Tomohiko Takahashi, Japan Account Manager at Setra.

## JAPAN NATIONAL STADIUM

LOCATION: Tokyo

YEAR: 2019

GROSS AREA: Approx. 109,800 m²

ARCHITECT: Kengo Kuma & Associates

BUILDING CONTRACTOR: New National Stadium Development Project Taisei Corporation, Azusa Sekkei Co. Ltd. and Kengo Kuma & Associates

## BUILDING MATERIALS

Wood, steel and concrete.

## 57%

The proportion of Japanese residential buildings built in wood.

Materials also play a key role in the interior. The ceilings are clad in cedar panels using the traditional Yamato-bari method, with the panels partially overlapping each other. Cross-laminated timber has been used for the lockers and benches in the changing rooms and recreation areas to create a warm and accessible feel.

"Two thirds of the country is forest, so we've always had the material close at hand. Last year, 57% of all new housing was built in wood," says Tomohiko Takahashi.

Despite this, Japan has long imported the majority of the wood used by the construction industry.

"Following a government decision in 2009 that half of the wood used should be domestic, we've started to use more Japanese wood.

**Meiken, the wood** manufacturer that supplied some of the wood for the stadium, has since opened the first Japanese factory for cross-laminated timber and the material is increasingly being used in new buildings. Ariake Stadium, designed by Nikken Sekkei, is another venue built for the Olympics. As in the National Stadium, wood plays an important role in everything from the structure and facade to the interior and stands. Once again, Meiken supplied some of the building materials.

"Ariake's advanced wooden roof structure spans over 90 metres. Our success here has made me realise the potential that lies in the wooden structures of the future," says Yu Nakashima, manager at Meiken.*

# BUILDING AT A HIGH LEVEL

If you're building new, build higher and build with wood, says ***Timber on Top***, a collaborative project that promotes sustainable urban development and a climate-neutral construction industry.

TEXT: HANNA MELLIN IMAGE: TENGBOM



Trikåfabriken is a brick building from 1929 that has been given a five-storey upward extension in wood.

The Timber on Top project brings together the whole construction industry – from architects, property owners and contractors to municipalities, consultants and suppliers – to create a knowledge platform on how best to build wooden extensions on top of existing buildings. The collective expertise regarding the approaches used has highlighted several advantages of this construction method.

Tomas Alsmarker is the project manager for Timber on Top.

"Wood is a circular material that is also lightweight, making it possible to add several storeys to an existing building. It's easier to build industrially in wood than with other methods on sites that are short on space, while details and features can be designed for easy assembly and disassembly. All construction needs to be based on circular materials, circular design and what has already been built. How can that be done? By building 'on top' instead of 'on the ground'.

**Upward extensions** using bio-based materials such as wood can help reduce the waste of resources in the construction sector and expand the options for increasing housing where there is a lack of development land. Timber on Top is exploring these opportunities from a variety of angles in eight work packages, each with a different focus, such as the sustainable, economic and social elements of the construction method.

The project has a large number of partners, including several municipalities. Jessica Becker is an architect specialising in wood and project coordinator at Wood City Sweden, one of the organisations behind Timber on Top.

"Every municipality is grappling with these issues, the climate issue and the transition to circular and bio-based construction where materials can be reused and recycled. Several cities are actively working on the densification of inner-city areas and the refurbishment of the 'Miljonprogram' housing from the 1960s and 70s. We're experiencing great interest from the municipalities. Extending upwards in wood on existing buildings is a good way to approach sustainable and climate-smart urban development," she says.

Tomas Alsmarker believes that the knowledge bank could be of great help in future urban planning:

"Municipalities are pushing for a climate-neutral construction sector. Timber on Top can help to achieving the goal of a climate-neutral Sweden by 2045. The website timberontop.se, for example, offers a starting point for a municipality or a developer, when planning and costing an extension project, and working out how to make the whole business circular," he explains.

**BRF Glitne,** the townhouses built on the roof of Utopia shopping mall in Umeå, and the modern offices at the top of Trikåfabriken in Hammarby Sjöstad in Stockholm are examples of eye-catching wooden extensions, and Timber on Top worked on both projects.

Jessica and Tomas continue:

"The eight work packages developed so far and available on timberontop.se are a foundation, a platform to build on. Municipalities, developers and other stakeholders don't have to start from scratch, but can draw instead on the knowledge developed in the different work packages."

Wood City Sweden provides the knowledge platform and acts as a hub for feeding back experience and knowledge from the projects to the various work packages.

"Each new extension project can be started from a slightly better state of knowledge. Timber on Top works on an open-source basis, which also makes the knowledge platform much more of a living resource," says Jessica. ∗

"EVERY MUNICIPALITY IS GRAPPLING WITH THESE ISSUES."

Jessica Becker, architect

"ALL CONSTRUCTION NEEDS TO BE BASED ON CIRCULAR MATERIALS."

Tomas Alsmarker, project manager for Timber on Top.

**TIMBER ON TOP collaborates with the Swedish Wood Building Council, the non-profit association Wood City Sweden, RISE Research Institutes of Sweden, Luleå University of Technology and Linköping University.**

# Tradition and innovation

Architect ***Rahel Belatchew*** combines tradition with innovation. In her wooden buildings, she shows how a traditional building material can take on a modern form.

TEXT: **HEDVIG ANDERSSON** IMAGE: **JENNY ÖHMAN**

**RAHEL BELATCHEW**

OCCUPATION: Architect
WORKS AT: Belatchew Arkitekter

**CURRENT PROJECT:**
The Flora apartment building in Midsommarkransen in southern Stockholm with a cedar facade.

The Flora apartment block in Midsommarkransen in southern Stockholm was completed last year. Rahel Belatchew chose a cedar facade for the building, both for environmental reasons and because she wanted a living material with natural variations. Sedum and herbs grow on the roof.

IMAGE: MICHAEL PERLMUTTER

Rahel Belatchew was born in Addis Ababa, Ethiopia. She grew up in Uppsala, Sweden, and gained a Master's degree in Architecture at the Ecole Spéciale d'Architecture in Paris. She then worked as an architect in Paris, Luxembourg and Tokyo, before founding Belatchew Architects in 2006. Her first recollection of wood comes from her childhood home.

"My first memory of the material is the brown varnished panelling in my bedroom where I grew up, in the attic of our house in Uppsala. It was typical 1970s and a bit too rustic for my taste."

**Not love at** first sight then. There wasn't much talk about wood at university either. Concrete was the material of the day.

"In Paris in the 1990s, it was concrete architecture that stood out. However, we did have courses in wood construction and learned about large, simply supported glulam structures. In my fourth year I designed an egg-shaped sports hall with a wooden structure, and later I discovered traditional Japanese wooden architecture."

When the time came for Rahel Belatchew to design a house for herself and her family, wood felt like the natural choice. Villa RBDVD in Saltsjö-Boo was built in 2004 with a stick-built timber frame and a Siberian larch facade.

**"I wanted to show how the tradition of building in wood could take on a modern form."**

"I designed Villa RBDVD at a time when most of the detached houses being built were cookie-cutter pastiches of Astrid Lindgren's fictional Noisy Village. I wanted to show how the tradition of building in wood could take on a modern form."

She says there are obvious benefits to the material.

"The big advantage of wood is that it's renewable and doesn't require as much energy to produce as concrete does. Wood is also light in weight, which makes it easier to transport, and it lends itself well to upward extensions."

**Rahel Belatchew** believes we will see more wooden architecture in the future.

"I think we'll continue to increase the proportion of buildings made from wood. We can improve our ability to build wooden frames at competitive prices and the industry needs to develop its capacity. We'll also see new products from biomass. There are already prototypes of transparent wood, for example." ⁎

# With a wooden frame

Architects and structural engineers. Builders and home buyers. Many are following the ***Cederhusen*** development in Stockholm with interest, as one of the largest, climate-smart, wooden neighbourhoods in the world emerges.

TEXT: **LENA LIDBERG** IMAGE: **KLAS SJÖBERG**

On the fifth floor of Bologna 2. Christoffer Lind, Project Manager Setra, Nanita Brar, Supervisor Veidekke and Amanda Roberg, Project Manager Setra.

WOOD CONSTRUCTION has many climate and environmental benefits. In technical terms, wood's features also include low weight, great flexibility and a fast construction process.

We are in Hagastaden, the new district that connects Stockholm with Solna. There are plenty of conventional concrete high-rises around here, but on the most complex site, a couple of blocks are being completed that stand out in several ways. Suddenly there is a scent of the forest in the middle of the city.

"It's great to work with these exciting buildings and make history here. I'm convinced this is the way forward for building multi-family housing," says Nanita Brar, supervisor for frames, facades and roofs at contractor Veidekke.

**The development is** called Cederhusen (Cedar Houses) after the cedar shingles being used on the facades. The cedar itself is eye-catching for its vibrancy and the way it brings out light and shade, but what makes the buildings unique above all is the mass timber frames.

For the first time in Sweden, an entire residential block is being built in cross-laminated timber, or CLT as it is also known.

## CEDERHUSEN

PROJECT: Cederhusen
COMPRISES: 236 apartments (1–5 rooms) and eight retail units.
LOCATION: Hagastaden, Stockholm
BUILT IN: 2020–2024
GROSS AREA: Approx. 22,000 m² above ground.
DEVELOPER: Folkhem
ARCHITECT: General Architecture
STRUCTURAL ENGINEERS: Bjerking and Byggnadstekniska Byrån
OTHER CONSULTANTS:
FIRE SAFETY: WSP Malmö
ACOUSTICS: Acuwood
MOISTURE: Karnehed
TIMBER FRAME: Setra
EXTERIOR CLADDING: Moelven
BUILDING CONTRACTOR: Bologna 1 & 2: Veidekke
Humboldt 1 & 2: Not yet procured.

## BUILDING MATERIALS

Structural frame in CLT, except for the two lowest levels, which are built in concrete. For Bologna 1 & 2, Setra has delivered 3,200 m³ of wood. Facade of cedar shingles and glulam.

## 11 STOREYS

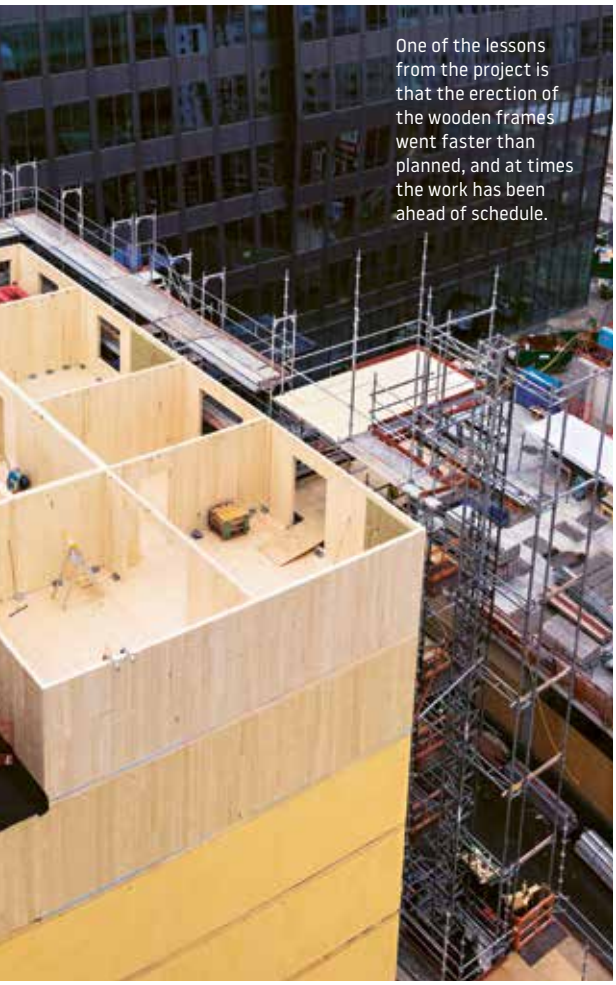
Eleven of the 13 storeys in the tallest Cederhusen block are made of CLT.

### FOUR BUILDINGS IN TWO BLOCKS

»Installation of the wooden frames for the first building, Bologna 1, began in September 2020.

»Work on the second building, Bologna 2, has been underway since March 2021, with the assembly due for completion in June.

»Construction of the third and fourth Cederhusen buildings, Humboldt 1 and Humboldt 2, will begin in 2023.



One of the lessons from the project is that the erection of the wooden frames went faster than planned, and at times the work has been ahead of schedule.

The wall units are delivered to the construction site in finished dimensions. The largest elements are about 3 metres high and 12.3 metres long.

The frames have been produced by Setra and come directly from the company's factory in Långshyttan in southern Dalarna.

Amanda Roberg at Setra has been involved in the deliveries since last autumn – first as project coordinator, then as project manager.

"It's great to be part of this unique venture. Cederhusen is a clear symbol of efficient and more climate-smart construction," she says.

One of the main challenges of the project has been finding the best possible solutions for this unusual plot. Cederhusen is being built right on top of the tunnels where the E4 highway passes under Hagastaden.

"You can't build in the traditional way in a place like this. Materials other than wood are too heavy," points out Nanita Brar.

However, the predominant benefit that she emphasises is the positive climate effects of all the wood used in the buildings. Wood is not only a renewable building material – it also captures and stores carbon dioxide from the atmosphere.

**"This is the way forward for building multi-family housing."**

Nanita Brar, supervisor for frames, facades and roofs at the contractor Veidekke.

The raw material for Cederhusen comes from forests in central Sweden, is processed at Setra's sawmill in Heby and is then refined at the CLT factory in Långshyttan.

"The focus is on sustainability at every stage. Throughout the supply chain, there is close cooperation to reduce the climate impact of the build," explains Amanda Roberg.

**One example of** this is that Setra can offer fossil-free transport via the Ernsts Express haulage company. Another example is that Setra manufactures CLT to the exact dimensions required by Veidekke, which both reduces material waste and makes the construction process more efficient.

This is particularly important in a densely populated area like Hagastaden, where there is little space for transport and unloading. The quick and easy assembly of the frames in turn contributes to a better working environment on site.

Follow the construction of Cederhusen in real time via the City of Stockholm's webcams: www.webbkameror.se/byggkameror. Choose Hagastaden.

"Now we don't have to underpin the walls. At the same time, we avoid concrete dust and get a cleaner and warmer indoor climate. Another advantage is that it's easier and faster to secure fixings in wood than in concrete. And if anything needs adjusting, you just get out the chainsaw," says Nanita Brar.

Jörgen Stattin, foreman at Veidekke, is also proud of the innovative blocks that are now taking shape in Hagastaden.

"It's great to be able to challenge the construction industry with new, sustainable initiatives. Cederhusen is generating a lot of valuable experience for the future," he says.

**Interest in large-scale** wood construction is currently high, both in Sweden and abroad, while Cederhusen is also an example of how keen people are to live in modern wooden homes.

In August 2022, Charlotta Theander and her family will move into their apartment in the first of the Cederhusen buildings. Charlotta, her partner Helene and children Loui (almost three years old) and Ziggy (seven months) have chosen to leave a turn-of-the-century apartment in Birkastan for a newly built four-room apartment a few blocks away.

"It was friends in Hagastaden who told us about this lovely wooden development. We were a little late to the party and discovered that most of the units had been sold, but when a cancellation came up, we went for it straight away," says Charlotta Theander.

Since then, she has walked past the building almost every morning.

"It's exciting to watch this little oasis grow out of all the hustle and bustle above the E4. The fact that it's also a climate-smart home is a huge bonus," she adds. ✱

**"Optimised flows have enabled the second block to be built even faster than the first."**

Amanda Roberg, project manager at Setra.

## Did you know

»About 90% of Swedish single-family homes are built in wood.

»Almost 20% of Swedish apartment blocks are built in wood.

»Interest in industrial wood construction is growing. The wood construction sector's target for 2025 is for at least 50% of new apartment buildings to be built in wood.

**WANT TO KNOW MORE? Go to: setragroup.com/setra-cederhusen**

### ANNA ERVAST ÖBERG

OCCUPATION: Project Development Manager, with a background in architecture.

WORKS AT: Housing developer Folkhem, where her responsibilities include the Cederhusen project.

**ON WOOD**

"The opportunity to develop wood construction in urban environments attracted me to Folkhem in 2015. For climate reasons, the company has made the explicit decision to only build in wood."

# A new way to build – and a new way to collaborate

Her vision is for Cederhusen to be associated with faith in the future and a pioneering spirit. **Anna Ervast Öberg** hopes that the unique wooden neighbourhood will become a symbol of Stockholm's sustainability work.

TEXT: **LENA LIDBERG** IMAGE: **EMIL NORDIN**

Since the start of the project in 2016, Anna Ervast Öberg has played a key role in the design of Cederhusen, working closely with the landowner, the City of Stockholm, in the initial stages, for example.

**What challenges have you faced?**

First, a safe construction solution had to be found on top of the three tunnels that house the E4/E20 and the Värtabanan rail line. Many people said 'you can't build like that!' or 'it'll be too expensive', but we've proved that it can be done. Some also wondered how wood performs in terms of fire, acoustics and moisture. The short answer is that wood usually has better properties than other materials.

**How has the cooperation with all the suppliers worked?**

We've found a new, more modern and enjoyable way of working together. Fundamentally, we have a close exchange of knowledge all along the chain and take part in each other's processes to ensure the quality of the climate work. By focusing on shared commercial benefit, efficiency and traceability, we're able to address the issues that can't be resolved through specifications of requirements and procurement alone.

**Has there been much interest in living in Cederhusen?**

Huge interest, right from the start. The first block has 111 apartments, and almost all of them are already sold. The project is clearly economically viable, even in Sweden's toughest housing market.

**How would you describe the two blocks?**

The Cederhusen development brings the first mass timber buildings to Stockholm's inner city. One of the buildings will have an 11-storey wooden frame, and that's the highest anyone has ever gone in Sweden using CLT. Many people have worked very hard to make Cederhusen a reality and it's fantastic that it's happening now. Visiting the site makes me very happy! ✻

IMAGE: ASTRID LINNÉA ANDERSSON

# Build for fire safety

**For a long time there was a great deal of scepticism about building high-rise buildings in wood, primarily due to fire safety concerns. But new technologies – and new building regulations – have been a game changer.** TEXT: LENA LIDBERG

For over a century, Sweden had a ban on constructing multi-storey buildings in wood. This was a reaction to the old town fires that often swept through dense wooden slums, sparked by candles and open fires. The ban ended in 1994, when the National Board of Housing, Building and Planning set out new building regulations. The starting point was that all building materials should be subject to the same functional requirements, including on fire safety.

"That made wood interesting again. The new rules allowed for the construction of wooden buildings higher than just two storeys," explains Birgit Östman, Emeritus Professor of Building Technology at Linnaeus University in Växjö.

She specialises in fire safety in timber structures and has been studying the subject since the 1970s.

"Larger-scale wood construction has really taken off in recent years, for ecological, economic and aesthetic reasons. At the same time, there are still some serious misconceptions about fire risks and how wood behaves in the event of fire," says Birgit Östman.

Since wood began competing with steel and concrete, the debate has sometimes been heated. Critics have pointed out, among other things, that wood is basically a combustible material.

"That's certainly true, but wood can also have properties that are more fire-resistant than some other materials. Wood dust and sawdust are highly combustible – as is aluminium dust – but it's usually difficult for a large log or a solid timber post to catch fire. The larger the dimensions, the higher the load-bearing capacity and the better the fire safety," asserts Birgit.

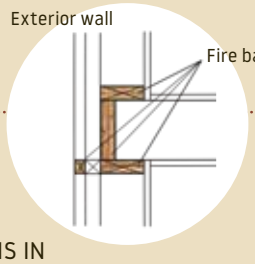
**Another advantage of** wood is that it doesn't conduct heat very well. This can be compared with the properties of steel: it may not be considered combustible, but it is a material with high thermal conductivity. In the event of a fire, this can lead to the collapse of the entire steel structure.

"The risk of a load-bearing timber frame giving way quickly is not as great. When wood burns, the inner parts can initially be protected. A charred layer forms on the surface of the wood, but as long as there is healthy wood underneath, the structure will retain its load-bearing capacity," says Birgit Östman. ✱

**BIRGIT ÖSTMAN**
EMERITUS PROFESSOR OF BUILDING TECHNOLOGY AT LINNAEUS UNIVERSITY IN VÄXJÖ

# "THERE ARE SOME SERIOUS MISCONCEPTIONS ABOUT FIRE RISKS."

1. Examples of fire barriers to prevent void fires within wooden structures.




2. Fewer fires occur in modern wooden buildings than in comparable buildings.

3. Sprinklers are triggered at an early stage.

## THREE CLAIMS IN THE DEBATE:

### 1

**"Wood is combustible and therefore flammable."**

*Birgit Östman responds:*
"It's all about the dimensions of the wood. Wood dust is highly flammable, but solid wood such as glulam and CLT in large dimensions don't easily catch fire. Of course – like other materials – wood needs to be handled responsibly. It's important to take into account the properties of the wood and to be meticulous about the way walls and floors are installed, for example. When drilling holes and running pipes for water and waste, everything needs to be properly joined and sealed so a fire can't get into any of the cavities. The builder has a major responsibility here – careful inspections are needed to ensure that everything is right. Wood is also often used as a surface material, for example on walls. This is possible even in high-rise buildings, provided that the wood is fireproofed or the home has sprinklers."

### 2

**"It is more dangerous to live in wooden buildings than in other buildings."**

*Birgit Östman responds:*
"This is incorrect. Studies have shown that fewer fires occur in modern wooden buildings than in comparable buildings. It's also worth noting that the size of the building is not a determining factor – fatal fires are about as common in low-rise structures as in higher ones, regardless of the building material. In Sweden, around 100 people die in fires every year, and this figure could be significantly reduced if buildings were fitted with sprinkler systems. Sprinklers save lives!"

### 3

**"Sprinklers cause severe moisture and water damage."**

*Birgit Östman responds:*
"This is a misconception. A sprinkler is triggered at an early stage, when relatively little water is needed to extinguish or control a fire. If the fire is left to develop, it will quickly grow, and then the Fire Service will often use large amounts of water in their extinguishing work, which can cause extensive damage. However, there is no evidence that this type of damage is greater in wooden houses than in other buildings."

## !

### FIRE SAFETY PROPERTIES OF WOOD

»It is difficult to set fire to a large wooden beam.

»Wood retains its load-bearing capacity for a long time, charcoal forms on the outside but healthy wood on the inside means that the functional performance is maintained.

»The same functional requirements apply to wood as to other building materials.


»Setra's markets are Sweden (34%), Europe (28%), Asia and Australia (21%), North Africa and the Middle East (17%) and, from 2021, the USA.

IMAGE: ÅKE E:SON LINDMAN

## European Bauhaus

A new initiative from the European Commission invites discussion on the future of construction and housing. Under the banner of 'New Bauhaus', companies, architects, engineers and representatives from the wood industry will come together in an interdisciplinary collaboration to advance the development of urban planning, with a focus on the climate. The Bauhaus initiative was launched in spring 2021 with the aim of building sustainably, aesthetically and functionally for a green future.

**Follow the initiative at** #NewEuropeanBauhaus.

IMAGE: SCANDINAV

## Wave of renovations planned in the EU

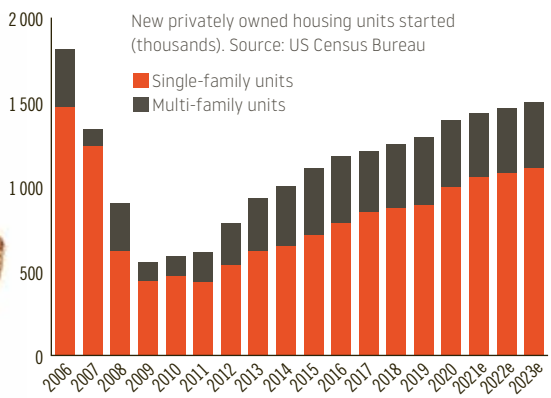
Europe is set to become the world's first climate-neutral continent by 2050. The EU's post-COVID recovery package includes renovation plans to make 35 million buildings energy and resource efficient by 2030. The European Commission aims to double the pace of renovations over the next ten years, which could create 160,000 new green jobs in the construction sector.

**MARKET USA**

IMAGE: SCANDINAV

## WANTS WOOD

The US is the world's largest market for wood products, with new construction now at its highest level since the 2008 financial crisis and wood consumption expected to remain high in the long term.




»PRIVATE HOUSING Wood consumption in the US is driven by a strong increase in new housebuilding. However, the pace still falls short of actual demand, which would require work to begin on 1.8 million new homes each year.

# A PLACE TO COME TOGETHER

Kalobeyei in Kenya is one of the world's oldest and largest refugee camps. Now the camp is gaining a permanent building – a pavilion made of cross-laminated timber. The UN sees a need for permanent assembly spaces and more structure in the camp, which has existed for 25 years. Designed by Swedish architect Petra Gipp, the pavilion – a model of efficient wood construction – is intended to be a place where mothers and children can come together for meetings and activities.
The project is being run by housing developer Arvet and UN Habitat, with Setra as a sponsor.

IMAGE: PETRA GIPP ARKITEKTUR

**SUMMER READY**
On Skeppsholmen in Stockholm, the heartwood pine decking meets the waves of the Baltic Sea and enhances the promenade around the island.

# Making a difference on the surface

It's all about what's on the outside this summer. ***Glulam*** from Setra becomes primed frames and planed boards become ***decking*** for lovely conservatories and terraces.

TEXT: **HANNA MELLIN** IMAGE: **KLAS SJÖBERG**

## Outside is in

Willab Garden uses Setra glulam beams for its conservatories, demand for which is greater than ever. More and more people want to extend their summer and be able to spend more time in the garden. Sales of conservatories and also greenhouses have increased significantly, with Willab's purchases of glulam frames, both for standard models and for custom solutions, also up as a consequence. Plus, using primed glulam beams, construction can continue on until the cusp of autumn. It also simplifies construction on site and enables the garden room to be completed more quickly.

GLULAM FRAMES
Willab refines Setra's products and, if the customer wishes, Willab primes the glulam frames.

IMAGE: WILLAB GARDEN

## Naturally beautiful

Durable decking that is also kind to the environment. It is built using heartwood pine from Setra. Heartwood pine comprises over 90% pure heartwood from the innermost, hardest core of the pine tree, which provides natural rot protection and turns a beautiful grey over time. Setra's range also includes decking pressure-treated with copper salts to last for many years in harsh environments.

DECKING
Setra's pressure-treated decking is graded NTR AB by the Nordic Wood Preservation Council. Heartwood pine is rich in natural preservatives and doesn't need to be treated.

IMAGE: KLAS SJÖBERG

**OLLE BERG,**
EVP Market and Business Development at Setra, comments on the current market situation for wood products.

# "CONSUMPTION OF WOOD PRODUCTS HAS REALLY TAKEN OFF"

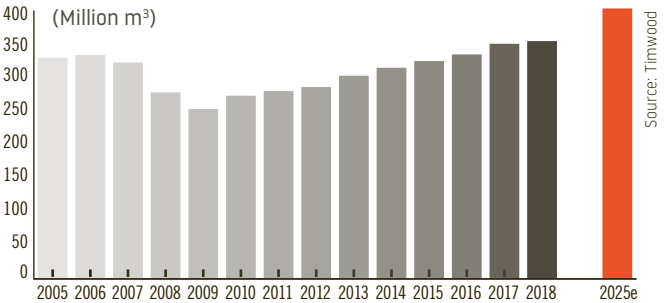
The pandemic has shaped our society for over a year, with a variety of consequences, including for the consumption of wood products. The greater importance of the home and a desire for renovation have driven up demand for building materials. In addition, we have low interest rates, support measures during the pandemic and low consumption – factors that are putting money into the private economy and contributing to the renovation boom we are seeing in Europe and the US in particular.

We are also seeing an increase in new construction in the US market and high wood consumption in China. In fact, it's the first time that both giants have demanded wood raw materials in such large quantities at the same time, and that's obviously fuelling the hot market.

**So what is** the production capacity around the world? The short answer is that current production rates are not able to meet the demand for raw material. Increasing capacity requires investment in new production facilities, which takes time. Canada, the main supplier to the US market, has a limited supply of raw material, which has led the US to increase imports from Europe. Some raw material is available in very specific locations such as the south-eastern US and eastern Russia, but production needs to be expanded. In Europe too, operations are running at full capacity. At Setra, we are well supplied with raw materials but have low stocks.

Overall, this suggests that the market situation is not going to change radically in the short term. The situation is similar for other building materials, where demand is also high. But we are seeing wood taking more and more of a share from other materials in new construction. The sustainability argument carries a lot of weight today and wood is also taking market share in new developments of apartment blocks. CLT has made its major breakthrough and production capacity has increased from virtually zero to two million cubic metres in Europe over the last ten years. The high demand for wood is certain to continue for the foreseeable future. ✱

Global consumption of wood products has increased steadily over the last ten years.



# MAY 2021 **CEDERHUSEN** STOCKHOLM

The CLT wall units are supplied with pre-cut holes for electrical and other installations.