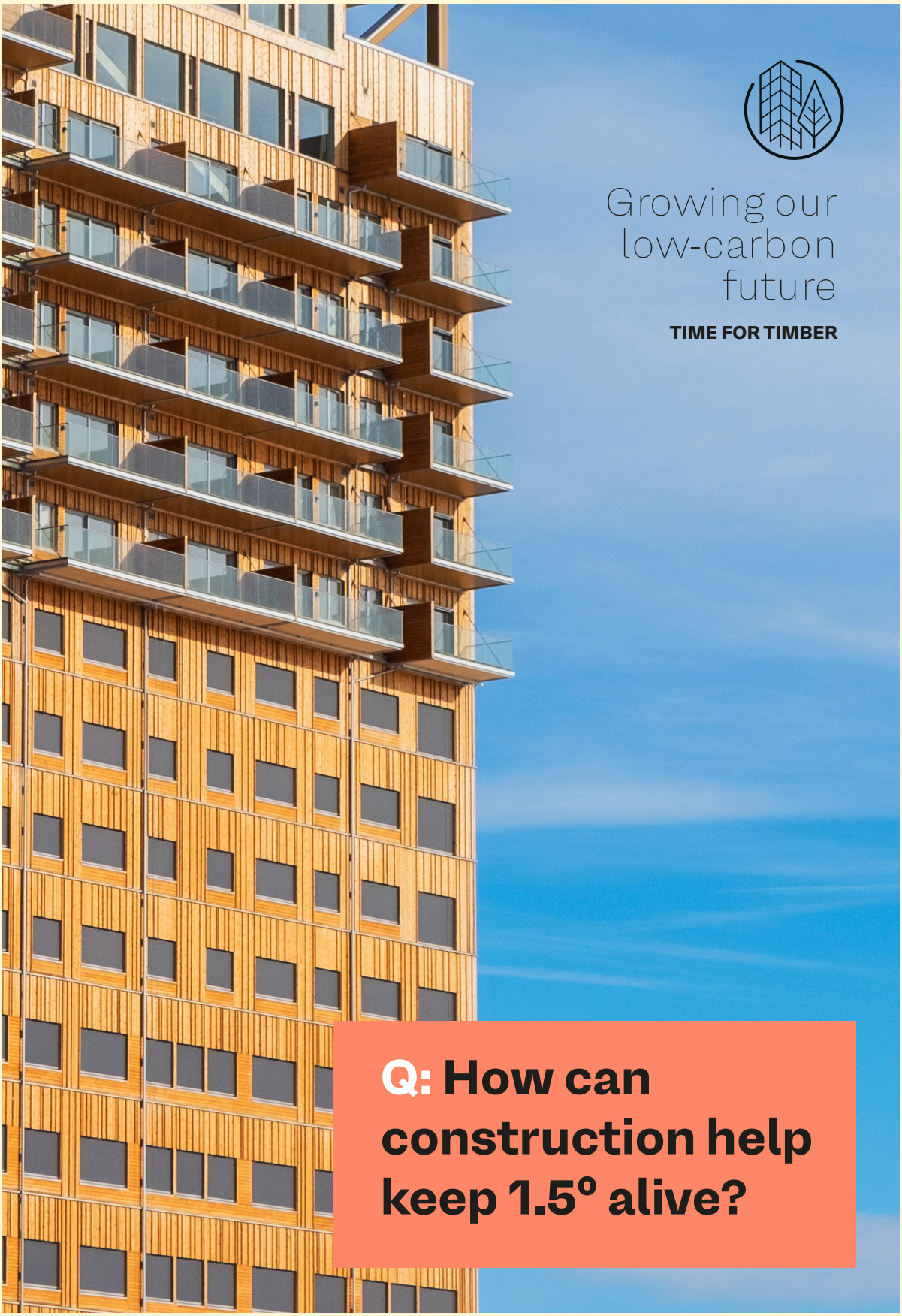

Growing our low-carbon future

TIME FOR TIMBER

Q: How can construction help keep 1.5° alive?

A: Use more timber

→ **Mjøstårnet, Brumunddal, Norway.** Standing 85.4 meters (280 ft) tall, Mjøstårnet is officially the world's tallest timber building. By Voll Arkitekter and builders HENT and Moelven Limtre, with 18 floors the tower is setting new standards for both height and construction methods for timber buildings. (c) Moelven

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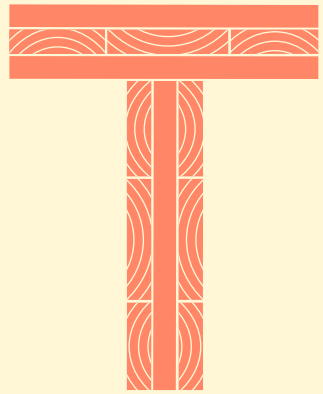

The construction and built environment sector is responsible for approximately 40% of global energy related CO_2 emissions.[i] A significant percentage of this comes from the extraction, processing and energy-intensive manufacturing of building products.

To achieve net zero CO_2 emissions by 2050, construction must rapidly decarbonise whilst still meeting the needs of a growing urban population, the increasing demand for new buildings and the urgent requirement to renovate existing buildings.

Wood is the only sustainable structural material that grows worldwide which can enable a substantial decarbonisation of the built environment based on existing business models and proven technology; providing vast carbon sinks in our rural areas and carbon stores in our cities.[ii]

The climate case for wood

Emissions from the built environment come from two main sources:

- **The energy we consume within buildings for heating, cooling and power (operational emissions)**
- **The emissions associated with the extraction, processing and manufacture of building products (embodied emissions)**

Increasing the use of wood is an effective way of reducing both.

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Timber has naturally insulating properties, being 10 times more thermally efficient than concrete and 400 times more than steel, reducing operational emissions created due to heat loss within buildings.[iii] This makes timber and timber products ideal for the renovation and improvement of energy performance in existing buildings.

Wood is a naturally renewable material which:

1. **Sequesters** carbon in forests as trees grow
2. **Stores** carbon in harvested wood products
3. **Substitutes** for carbon intensive materials such as steel, concrete and plastics
4. Drives **Sustainable** forest management leading to greater growth
5. Contributes to a **Circular** economy as wood products can be reused, recycled and recovered for low-carbon energy at end-of-life

Lifecycle Assessment studies consistently show that timber products absorb and store more carbon than is emitted through their production – making them a net carbon reducer.

Using more wood in the built environment, including in furniture and interiors, is a natural, cost-effective, and sustainable carbon-capture solution[iv] – as once harvested, forests are replanted or allowed to regenerate naturally and carbon sequestration continues.[v] Increased investment in sustainable timber also provides viable income for local communities and creates incentives for sustainable forest management, preventing deforestation and encouraging conservation of biodiversity and ecosystem services.[vi]

In addition, using wood products in construction displaces the use of carbon intensive alternatives such as steel, concrete and plastics, thus reducing emissions even further.

Timber: the urban solution

Timber buildings have already been built that are more than 18-storeys in height, thanks to the development of new, innovative, engineered wood products – and will reach even greater heights this century.

Contemporary urban areas now enjoy buildings using wood at height and at scale. Products such as Cross Laminated Timber (CLT), Glued Laminated Timber (Glulam) and Laminated Veneered Lumber (LVL), have the structural strength of steel and concrete with the added advantages of being light in weight, thus not requiring such substantial foundations or significant transport to move.

← **Carbon 12, Portland, Oregon by Kaiser + Path** This 85-foot-high mass timber condo provides residents with modern luxury, sustainable design and state-of-the-art technology. Constructed with sustainably harvested and certified CLT, when it was completed in 2018 it was one of the tallest buildings of its kind in North America, and the project is opening the doors to taller wood buildings throughout the state. (c) Andrew Pogue

Europe's forest areas have increased by 10% over the last 30 years, at a rate of 643 thousand hectares per year.[vii]

Likewise, in the United States and Canada sustainable forest management has resulted in more than 50 consecutive years where growth has exceeded harvest.[vii]

This growth has been encouraged by the commercial management of forests for timber and other forest products.

Timber and timber frame buildings can be prefabricated in offsite factories, requiring fewer deliveries to site and have quicker on-site assembly times, with far less dust and noise to disturb other local residents.

Wood offers modular possibilities to redesign and modernise buildings via additional storeys, roof extensions and interior refurbishment, maximising the lifespan of existing buildings and reducing the need for demolition. Recovered wood also has the potential for reuse in the

TIME FOR TIMBER

manufacture of new products extending the time the carbon is stored.

Despite some mistaken perceptions and rhetoric finished timber buildings have no greater fire risk than concrete and steel buildings.

Policy Recommendations:

We are calling on political leaders and policy makers in every country to recognise forests and the global wood and forest industries as a major solution toward a more climate-resilient economy. This can be achieved through the following policies:

1 **Embed mandatory lifecycle assessments and embodied carbon thresholds within local and national building plans.** Only by measuring our environmental impacts will we be able to manage and steadily reduce our impact. These should be measured according to common metrics using existing tools, such as Environmental Product Declarations (EPD).

2 **Increase the use of wood within new build and renovation.** There is a need for affordable homes all over the world. Up-scaling must be done in a cost and climate effective way, using off-site, industrial prefabrication based on light, high quality, easy to transport, and sustainable, wood-based solutions. This will allow for less disturbance next to construction sites, reduced waste and increased affordability.

3 **Drive the growth of the bio-based circular economy through sustainable public procurement.** Harnessing government spending to advantage climate-friendly solutions for construction and renovation of the building stock will allow investment and rapid expansion of the sector, thus supporting societal climate reduction goals.

4 **Facilitate resource efficient use of wood and wood recycling, especially collection and sorting in municipalities, and develop measures to gain access to post-consumer wood, an invaluable secondary raw material resource.** The recovery and reuse of wood helps to prolong carbon storage and maintain availability of resources for further life cycles. Using the same wood multiple times is the most efficient use of this natural, sustainable and precious resource.

5 **Increase training to upskill workers and create new jobs** to boost the development of a sustainable and circular bioeconomy. New areas such as modern renovation and prefabrication require different skillsets and knowledge bases. Enhancing training and education is essential to a) create more sustainable, green jobs, b) develop the new skills in nature-based materials and c) improve the traditional manufacturing in wood industries.

↑ Brock Commons Tallwood House is an 18-storey student residence at the Point Grey Campus of the University of British Columbia in Canada. At the time it was opened in 2017, it was the tallest mass timber structure in the world.

Courtesy of Acton Ostry Architects. Photographer: Michael Elkan

In conclusion, wood must be adopted more widely in the global built environment. The potential climate impacts of using more wood and wood-based materials are immense: they offer solutions based on existing business models and proven technology which simultaneously store carbon and substitute fossil resources and thus can diminish the CO_2 emissions caused by the global building stock.

Growing our low-carbon future: Time for Timber

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