

Special Feature Harnessing the Value of Forests and Trees



Standardize carbon neutral design

In the area of construction, we have established the pillar of standardizing carbon neutral design. By helping to spread ZEH, ZEB, life cycle carbon minus housing, and net-zero carbon buildings in Japan and abroad, we are striving to cut operational carbon (carbon during occupancy), which accounts for 70% of CO₂ emissions in the construction sector. At the same time, we are working to cut the remaining 30% from embodied carbon (carbon during construction) in construction, with the aim of establishing carbon neutral design through the dissemination of CO₂ emissions visualization software and other means.

Progress in Cutting Embodied Carbon

Global energy-based CO₂ emissions in 2021 were 36.3 billion tons, 37% of which came from the construction sector, making decarbonization of the construction sector a top global priority. We will strive to reduce CO₂ emissions during occupancy (operational carbon) through technological innovation and diffusion of ZEH, ZEB, and others. Still, it is expected that the world's building area will double its current size by around 2060 due to economic development in emerging countries and other reasons. In the future, reducing CO₂ emissions during construction (embodied carbon) is expected to become even more important. To support this, the Sumitomo Forestry Group is also focusing on the development and dissemination of life cycle carbon minus (LCCM) housing, which reduce CO₂ emissions throughout the house's life cycle, and is promoting decarbonization at both the construction and occupancy/operation stages.

Supporting Emissions Reductions with CO₂ Emissions Visualization Software

To reduce embodied carbon, it is necessary to consider the environmental impact of a building over its entire life cycle and calculate the embodied carbon from the procurement of raw materials for construction to disposal. One Click LCA (Life Cycle Assessment) software, for which we became the

2030 targets
Annual housing units supplied
27,000 units ▶ 50,000 units
As of December 31, 2021
(formulation of our long-term vision)

Japan	10,000 units
United States	23,000 units
Australia	5,500 units
Other*1	11,500 units

*1 Total for housing complexes, single family rentals, etc. in real estate development in the U.S., Australia, Europe, and Asia, including those via JVs.

Investment plan
Overseas non-residential wooden building investment (~2024)
30.0 billion yen

sole distributor in Japan in January 2022, is used in 130 countries around the world to support businesses in reducing CO₂ emissions by precisely calculating embodied carbon. The software is ISO compliant and supports more than 50 types of environmental certifications worldwide, including European standards.

In Europe, regulations are currently being tightened to reduce CO₂ emissions in the construction industry, and it is expected that greenhouse effect coefficient data disclosure will be mandated for all timber and building materials by 2030. In February 2023, we launched a project to promote acquisition of the EPD*2 environmental certification label for timber and building materials manufacturers in order to support this carbon neutral design throughout the construction industry. By providing and supporting the Japanese version of EPD Generator, which is support software for acquiring EPD labeling, we aim to help manufacturers achieve labor savings and reduced acquisition costs. In addition, we launched a One Click LCA calculation contract business for developers, general contractors, and design firms. We contribute to the decarbonization of society by supporting the construction industry as a whole in reducing CO₂ emissions.

*2 EPD (Environmental Product Declaration): An ISO-compliant environmental certification label that visualizes CO₂ emissions over the entire product life cycle, from resource extraction to disposal.

A Wooden Campus to Turn a Town into a Forest

The Sophia University Yotsuya Campus Building No. 15, completed in 2022, is a three-story fire-resistant wooden structure designed and constructed by Sumitomo Forestry. Compared to similar facilities built with standard reinforced concrete or steel frames, it reduced CO₂ emissions during material production for the structural framework by 15% and 20%, respectively. The structural framework uses 111.85 m³ of wood and stores about 84 tons of carbon (on a CO₂ basis), which is equivalent to the carbon storage of about 280 40-year old Japanese cedar trees. The facility will help turn its town into a forest, contributing to the achievement of the SDGs and the realization of a decarbonized society. By increasing the number of environmentally conscious buildings like these, we aim to contribute to the decarbonization of society as a whole.



This building also contributes to local production for local consumption by cedar from the Tama area for the exterior

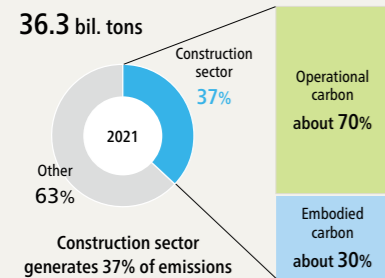
The "with TREE" Medium- to Large-scale Wooden Construction Brand

In March 2021, Sumitomo Forestry and Kumagai Gumi Co., Ltd. launched the "with TREE" brand of medium- to large-scale wooden construction, which adopts the concept is "architecture good for both the environment and your health." Its brand name is derived from "creating wooden buildings with high value and positive effects in cooperation with customers, with community, and with trees." In June 2022, construction began on a 10-story fire-resistant wood-frame building with one basement floor under the same brand name in Sapporo, Japan, through a joint venture with Kumagai Gumi Co., Ltd. The upper floors are made of hybrid laminated engineered wood, which contributes to the decarbonization of the city through the carbon storage action of wood. Going forward, we will make contributions toward the realization of a decarbonized society through the conversion to wooden structures and woodification of medium- to large-scale buildings.



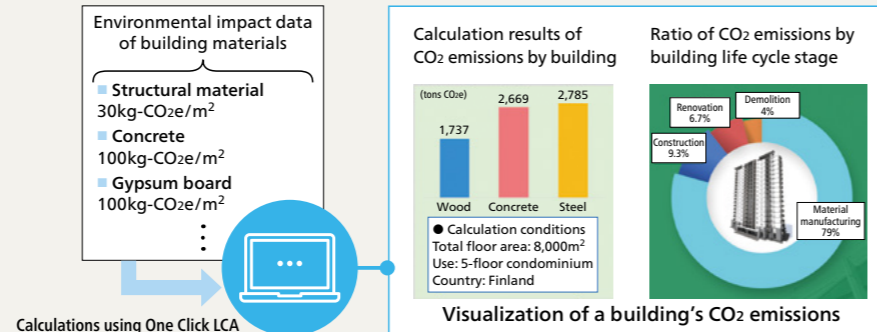
Fire-resistant engineered wood with built-in steel frame protects steel from heat

Global CO₂ Emissions from Energy



Source: Global Alliance for Buildings and Construction (2022)

Illustration of One Click LCA in Use



One Click LCA Partner Voice



Ms. Aditi Chitnis
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Toward Greater Environmentally Conscious Construction in Japan and Decarbonizing the Construction Industry

One Click LCA is a Finland-based company in the building and manufacturing life cycle assessment (LCA) calculation software and platform business. We globally provide One Click LCA software for visualizing and calculating CO₂ emissions in the construction industry, and are continuously developing the software to comply with regulations, standards, etc. in Europe and other parts of the world.

Our mission is to help people achieve carbon neutrality. While awareness of the need to reduce embodied carbon is growing in Europe, countries around the world, including Japan, tend to have their concerns slanted more toward operational carbon. Through this partnership with Sumitomo Forestry, we expect to provide enhanced customer support to users in Japan, and through the use of One Click LCA, we hope to promote the spread of environmentally conscious construction in Japan and the decarbonization of the construction industry.