



Introducing Three Plus Concrete Initiatives for Reducing Scope 3 Emissions

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As a **neighborhood creation platformer**,
we will reduce emissions along the entire supply chain from upstream to downstream



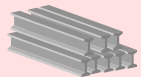
Upstream cooperation
and encouragement

Downstream proposals
and encouragement

Upstream



Wood



Steel



Concrete



Frame construction



Interior construction



Exterior construction

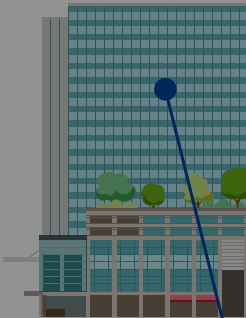


Transport and conveyance



General contractors

Real estate and development companies



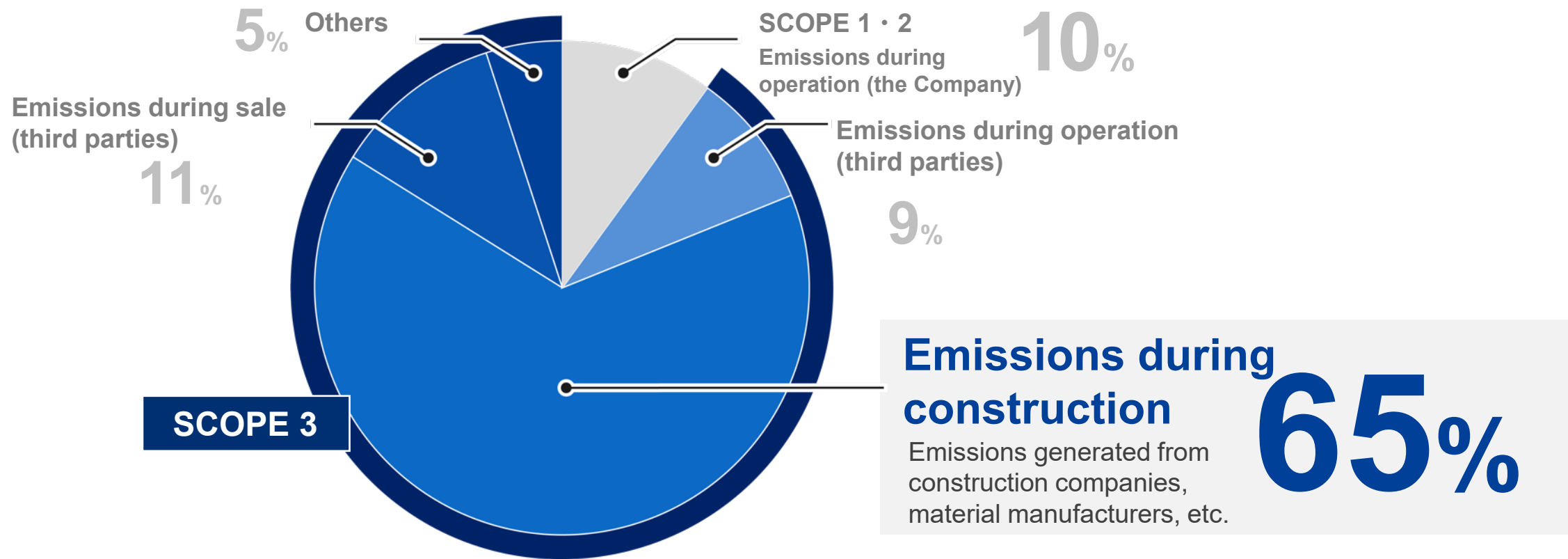
Downstream



GHG emissions during construction account for most of the emissions of the Mitsui Fudosan Group

Group GHG emissions based on SBT (FY2022)

CO₂ 5.503 million t-CO₂



We will become involved and contribute to **decarbonization** at every phase of smart city development and neighborhood creation, from upstream to downstream

1 Call on the innumerable companies involved in the neighborhood creation supply chain and visualize GHG emissions



- ▶ **Create appropriate indicators for decarbonization**
- ▶ **Form and propagate rules for visualization of GHG emissions**

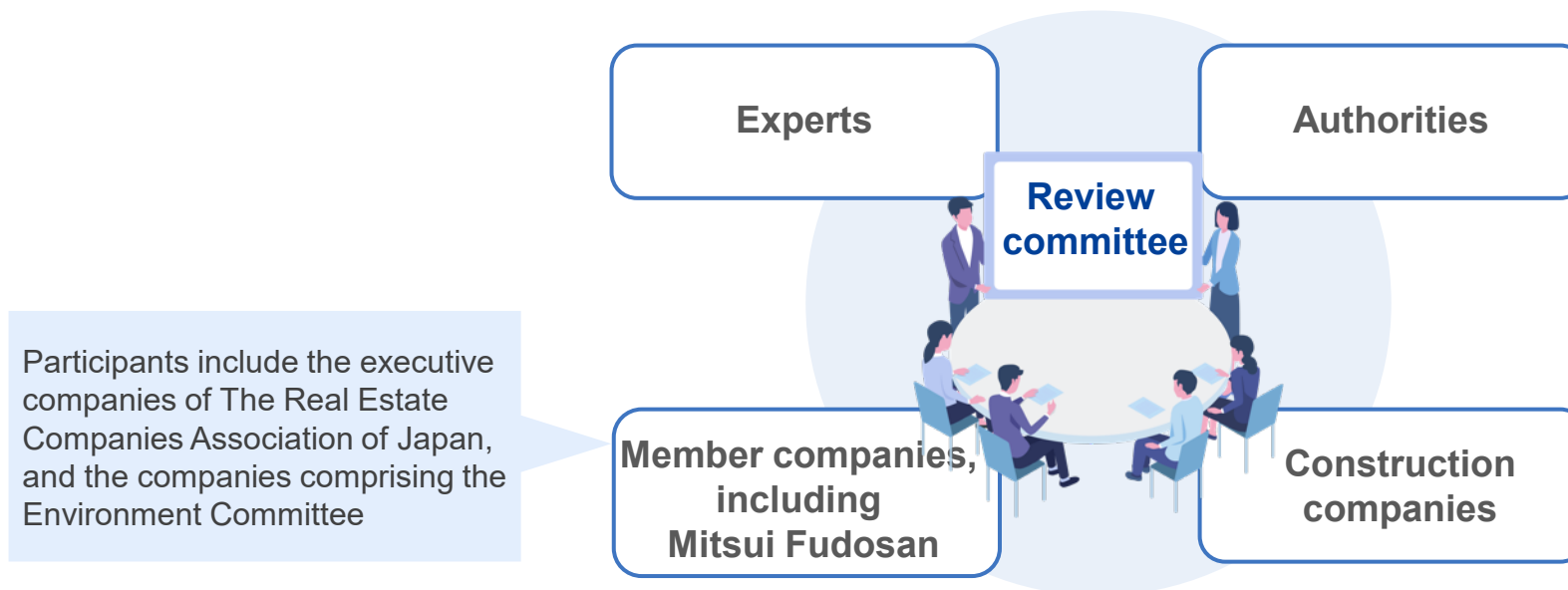
Formulated and published **“Construction GHG Emissions Calculation Manual”** (2022)

Differing from the conventional methods (emissions = total construction costs times emissions per unit (kg/yen)), this makes it possible visualize emissions by type of work and material



Moreover, a **review committee** was formed within **The Real Estate Companies Association of Japan**

The committee’s manual was released in **June 2023**

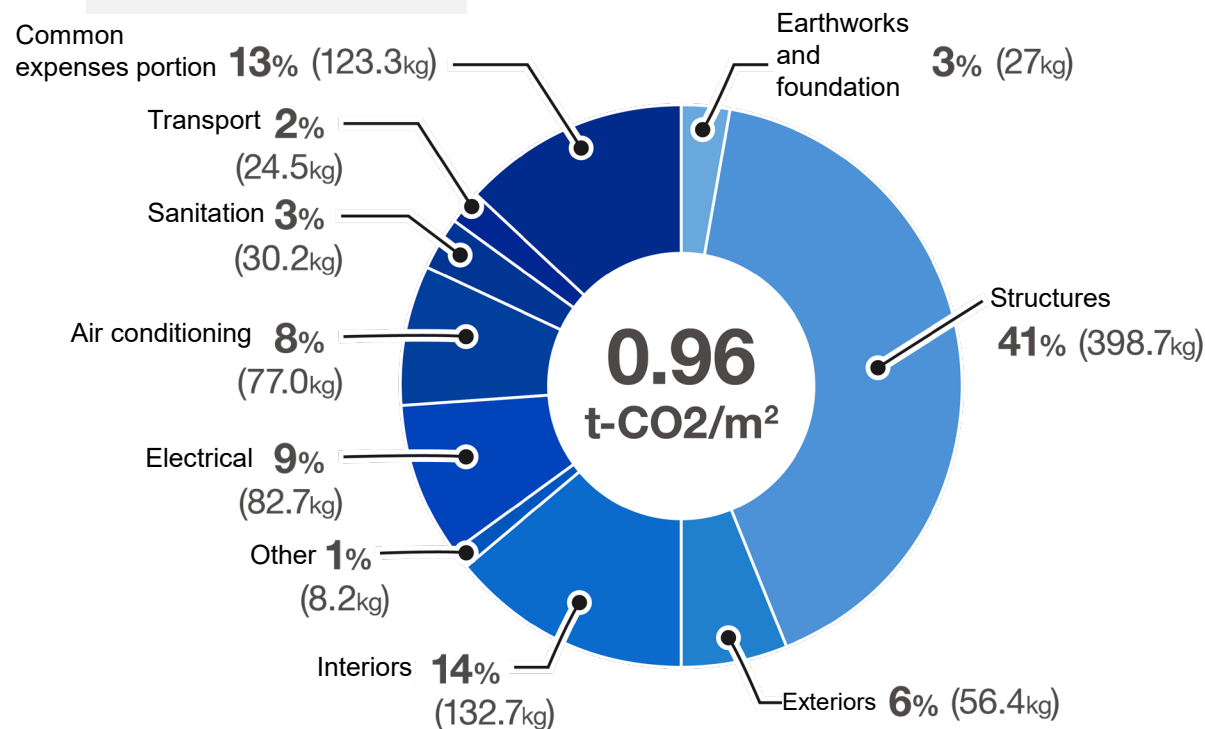


Participants include the executive companies of The Real Estate Companies Association of Japan, and the companies comprising the Environment Committee

Calculating Emissions with High Precision

Making it possible to grasp emissions reduction potential and incorporate the reduction efforts of individual companies

Model building



	Work type	Breakdown		kg-CO2/m²	Percentage
		Item	Item/Sub-item		
1	Building	3. Structures	3.3 Steel framing	249.0	25.9%
2	Building	3. Structures	3.1 Concrete	89.5	9.3%
3	Building	5. Interior finishing	5.3 Interior openings	37.0	3.8%
4	Building	5. Interior finishing	5.2 Interior walls	34.3	3.6%
5	Building	5. Interior finishing	5.1 Interior floors	33.5	3.5%
6	Building	3. Structures	3.4 Rebar	33.4	3.5%
7	Building	2. Earthworks, foundation	2.2 Piles, foundation	25.5	2.7%
8	Building	5. Interior finishing	5.9 Interior miscellaneous	25.2	2.6%
9	Elevators	1. Elevator and escalator facilities	1. Elevator and escalator facilities	24.5	2.6%
10	Building	3. Structures	3.9 Other	23.9	2.5%
11	Building	4. Exterior finishing	4.2 Exterior walls	19.6	2.0%
12	Electricity	11. Miscellaneous materials	11. Miscellaneous materials	16.6	1.7%
13	Air conditioning	4. Air conditioning equipment	4.2 Package type	15.7	1.6%
14	Air conditioning	10. Automatic regulation	10.3 Instrumentation work	14.0	1.5%
15	Electricity	1. Transformers	1.1 Cubicles	14.0	1.5%
16	Building	4. Exterior finishing	4.9 External miscellaneous	12.7	1.3%
17	Building	4. Exterior finishing	4.3 External openings	12.6	1.3%
18	Air conditioning	15. Insulation and coating	15. Insulation and coating	12.5	1.3%
19	Air conditioning	8. Duct work (materials and work)	8. Duct work (materials and work)	11.8	1.2%
20	Building	4. Exterior finishing	4.1 Roof	11.5	1.2%
21	Sanitation	8. Steel pipe and cast-iron pipe	8.1 Steel pipe	10.9	1.1%
22	Electricity	9. Pipe materials	9.1 Electrical piping	10.7	1.1%
23	Electricity	8. Wiring materials	8.2 Cable	9.4	1.0%
24	Electricity	4. Board types	4.3 Instrument panels	7.6	0.8%
25	Sanitation	9. Valves, meters, various hardware	9. Valves, meters, various hardware	7.6	0.8%
26	Building	6. Other	6. Other	5.2	0.5%
27	Electricity	7. Lighting	7.1 General lighting	5.2	0.5%

Calculating and ascertaining supply chain emissions

at a high precision based on common rules

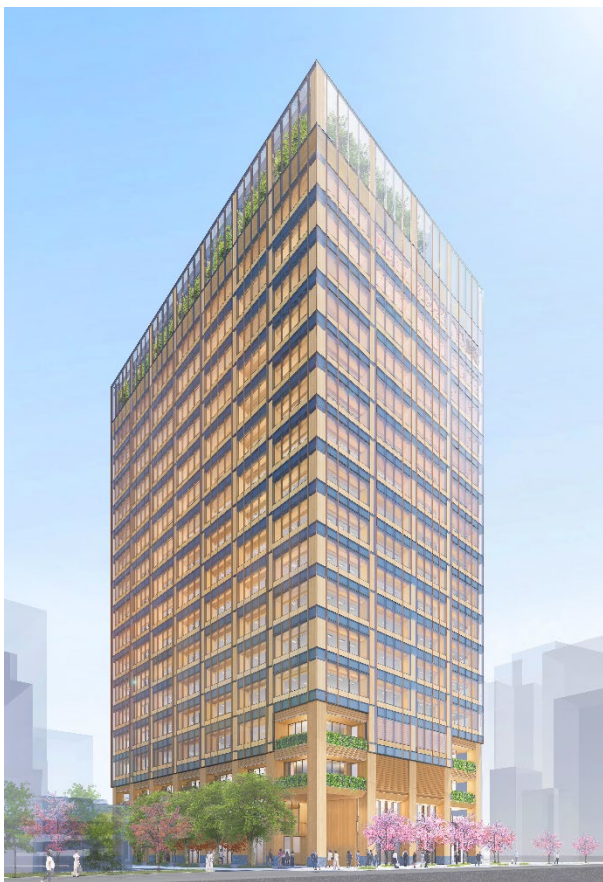


As a first step, we are making it mandatory for all Mitsui Fudosan Group supply chain companies to calculate emissions using the manual on **all properties** beginning **October 2023**. **This is the first initiative of its kind in the industry.**



Promote this initiative so that it expands to the **industry as a whole**

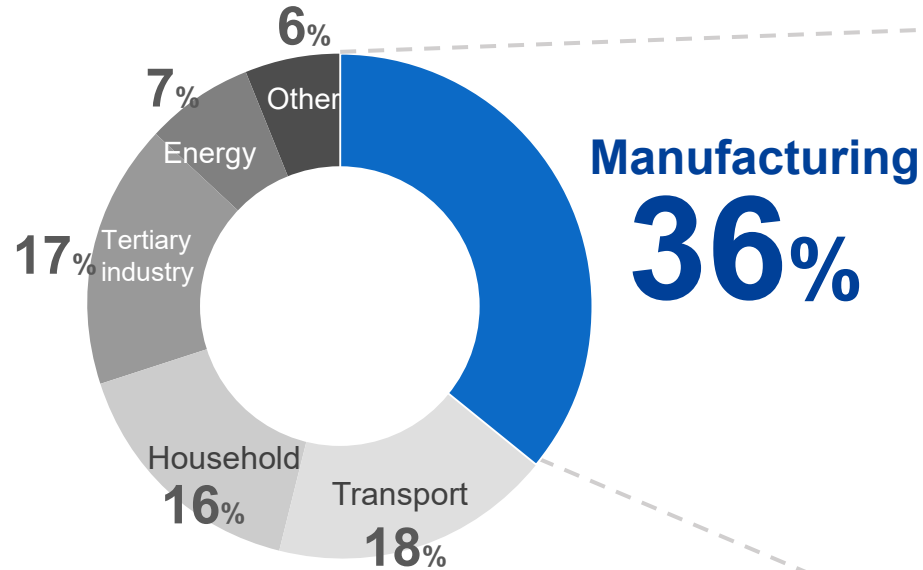
2 Proposal of a new building format like a flagship for the decarbonization era



- ▶ Promoting **carbon fixation at buildings using wood materials**
Innovative building development for the decarbonization era

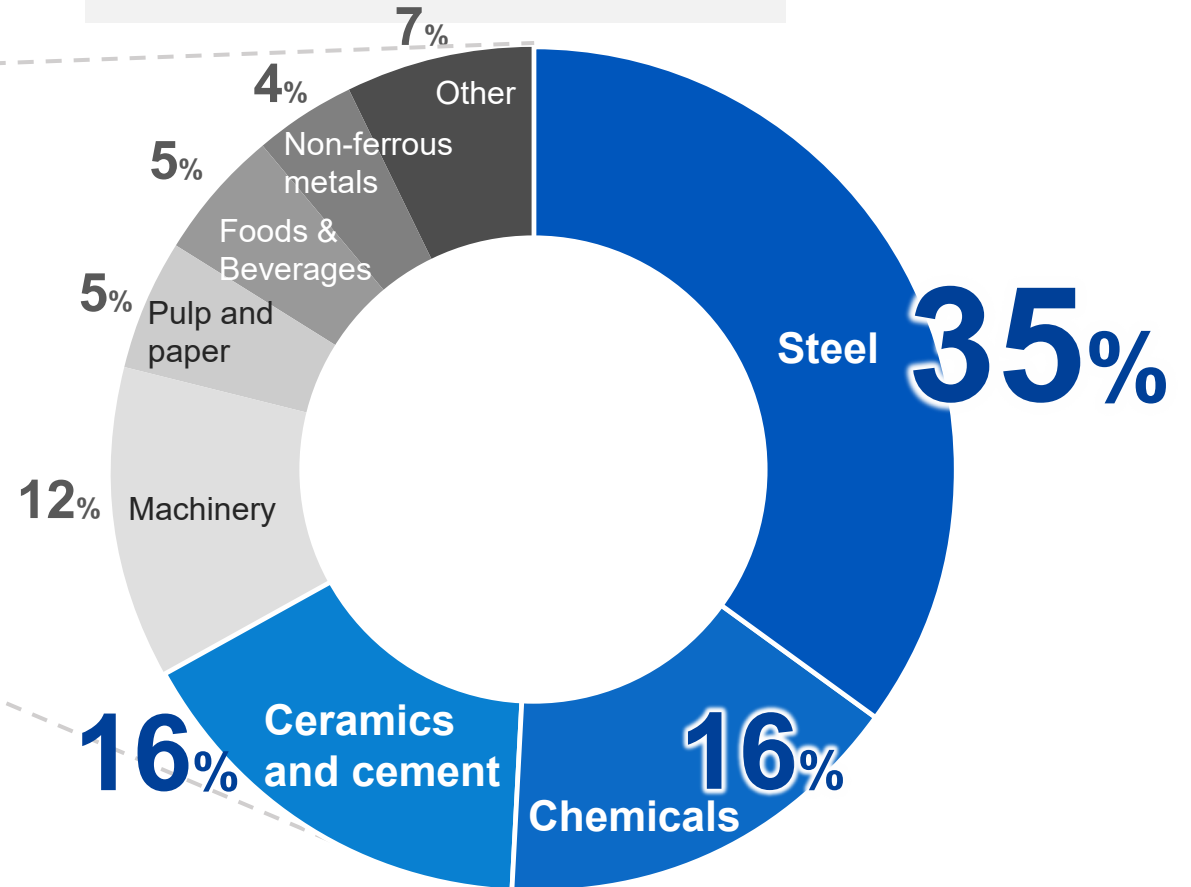
Provided by Mitsui Fudosan and Takenaka Corporation. *This perspective drawing is an image as of this point in time, but the design may change.

CO2 Emissions by Business Sector in Japan *1 *2



Total CO₂ emissions
10.44 million tons (FY2020)
 *CO₂ converted

Manufacturing Industry CO₂ Emissions by Sector ※3



Total CO₂ emissions **3.71 million tons** (FY2020)
 *CO₂ converted

*1 Uses CO₂ emissions by sector after electricity and heat distribution.
 *2 The manufacturing sector is the combined total of energy source/industry/manufacturing and non-energy source/construction processes/use of products
 *3 The chemicals sector is the total of energy source/chemical (including petroleum and coal products) and non-energy source/chemical industry. The ceramics and cement industry is the combined total of energy source/ceramics, clay and stone products (cement firing, etc.) and non-energy source/mineral industry

Example of New Building Format

Rental Office Building with a Wood-Frame Structure

One of the largest wood-frame buildings in Japan

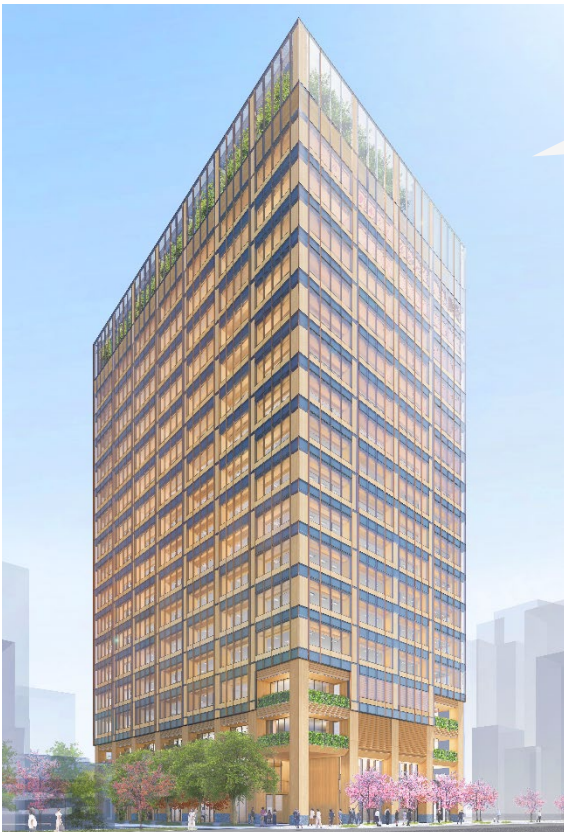
Planned to be built in Nihonbashi

- Wood-frame rental office building that is 84 meters high with 18 aboveground floors and floor space of around 28,000 m²
- Uses 1,100 m³ of wood from Japan for the wood structure, include wood from forests owned by the Mitsui Fudosan Group
- Company's First Office Building Property to Apply the "Construction GHG Emissions Calculation Manual" to Determine Emissions



Expected to **reduce CO₂ emissions by approximately 25% during construction** of the frame portion compared to general steel frame office buildings of the same size

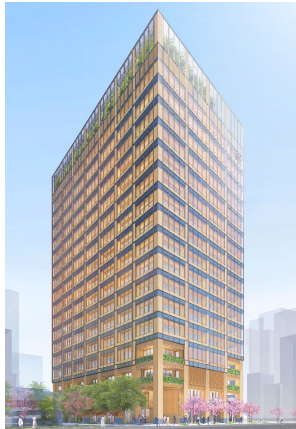
* Includes the amount of carbon dioxide stored by the use of wood based on the "Guidelines for the Indication of the Amount of Carbon Stored in Wood Used for Buildings"(published by the Forestry Agency) and the amount of CO₂ absorbed by trees planted after the harvest of trees used for manufacturing based on the "Calculation Method for the Amount of Carbon Dioxide Absorbed by Forests"(published by the Forestry Agency).



Provided by Mitsui Fudosan and Takenaka Corporation. *This perspective drawing is an image as of this point in time, but the design may change.

Using resources while raising trees and restoring forests contributes to reducing CO₂ emissions in the atmosphere

Create "never-ending forests"



Provided by the Mitsui Fudosan and Takenaka Corporation. *This perspective drawing is an image as of this point in time, but the design may change.

Even after processing, wood is a carbon fixation material, so it doesn't give off the CO₂ it has absorbed

= Secondary forest

As forests mature, their capacity to absorb CO₂ declines, so using forests serves to revive them

Using



Planting

Grow while absorbing atmospheric CO₂ to reduce CO₂

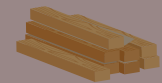
Cultivating

Actively using wood products from forests owned by the Mitsui Fudosan Group at a wood-frame rental office building in Nihonbashi

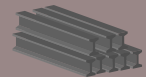
> A cycle of planting, cultivating and using

Toward self-sufficient supply of construction materials and the realization of a sustainable cycle for wood materials and local economies

Upstream



Wood



Steel



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Frame construction



Interior construction



Exterior construction

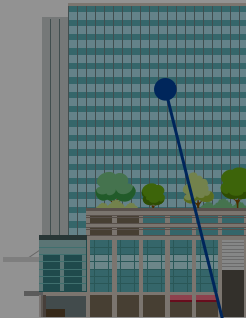


Transport and conveyance

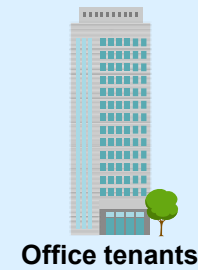


General contractors

Real estate and development companies



Downstream



Office tenants



Retail facility tenants



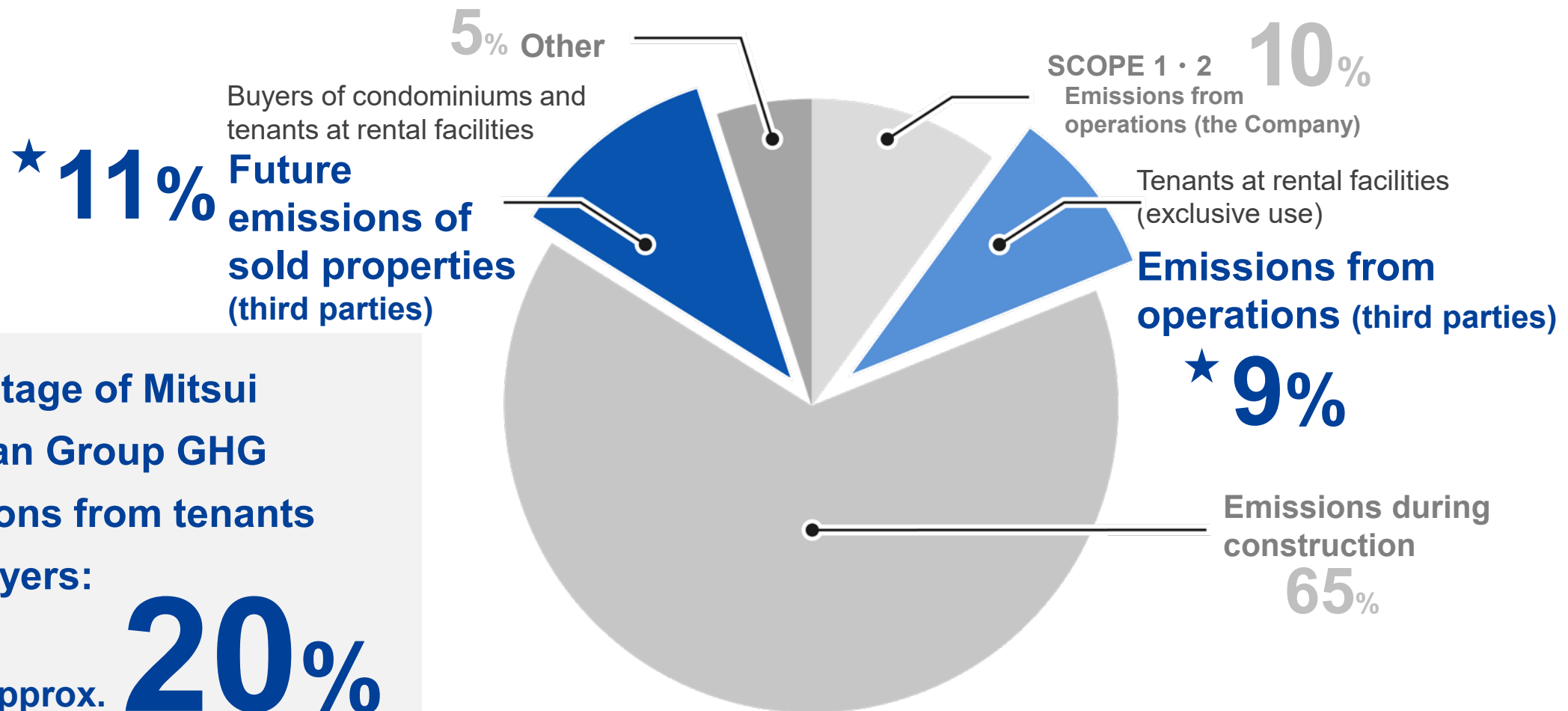
Housing



Group GHG emissions based on SBT (FY2022)

CO₂

5.503 million t-CO₂



Percentage of Mitsui Fudosan Group GHG emissions from tenants and buyers:

approx. **20%**

3 Raise awareness of tenants and the public and encourage behavioral changes



Mitsui Fudosan Residential
Sustainable Living
(Sus-Katsu Program)

▶ Propose and promote **new lifestyles aimed at decarbonization**



Things that anyone can do, experiences not everyone can have

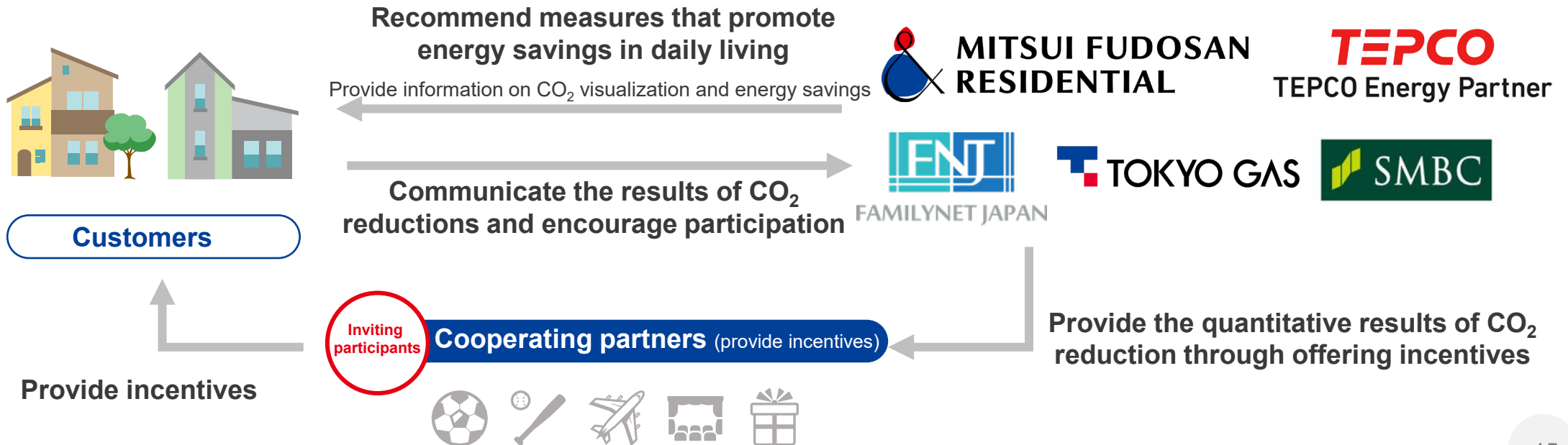
Mitsui Fudosan Residential

「As an energy-saving platform for lifestyles, expanding an industry-first scheme to owned condominiums properties

- 1 Visualization of CO₂ emissions for each unit
- 2 Points for reducing CO₂ emissions though people engaging in energy-saving activities in their daily lives
- 3 Points can be exchanged for incentives, making energy savings fun and sustainable



Standard deployment at **owned condominiums in the Tokyo metro area starting with 2022 designs**
 (To be deployed at all properties in principle)
Scheduled for full-fledged operations from 2024





System developed through a partnership between Mitsui Fudosan Residential, TEPCO Energy Partner, FAMILYNET JAPAN, and TOKYO GAS

Points are earned on an app for reducing CO₂ emissions by saving energy during daily living. Customers can then trade the points they earn for incentives.

The program makes it possible to grasp the effects of efforts and motivate participants to make reductions, which makes the program even more effective

Promoting the deployment of this "Sus-Katsu" program for new properties by 2030. We also plan to expand the **initiatives for the 240,000 condominium households previously developed.** The service will be provided at **properties with tenants moving in from April 2024.**

Premium incentives made available through cooperation with various companies and groups beyond the industry (our partners) in order for individuals to change their behavior at home

- Pitch-side seats at **soccer matches**
- **Baseball spectating** in a commentary seat with a retired legend of the team
- **Tickets to musicals** plus original merchandise
- Sustainable Living tour **in Hokkaido**
- **Okinawa** sustainable tourism

etc.



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Rendered images



Open campaign to build momentum ▶ **Approx. 10,000 households** participated

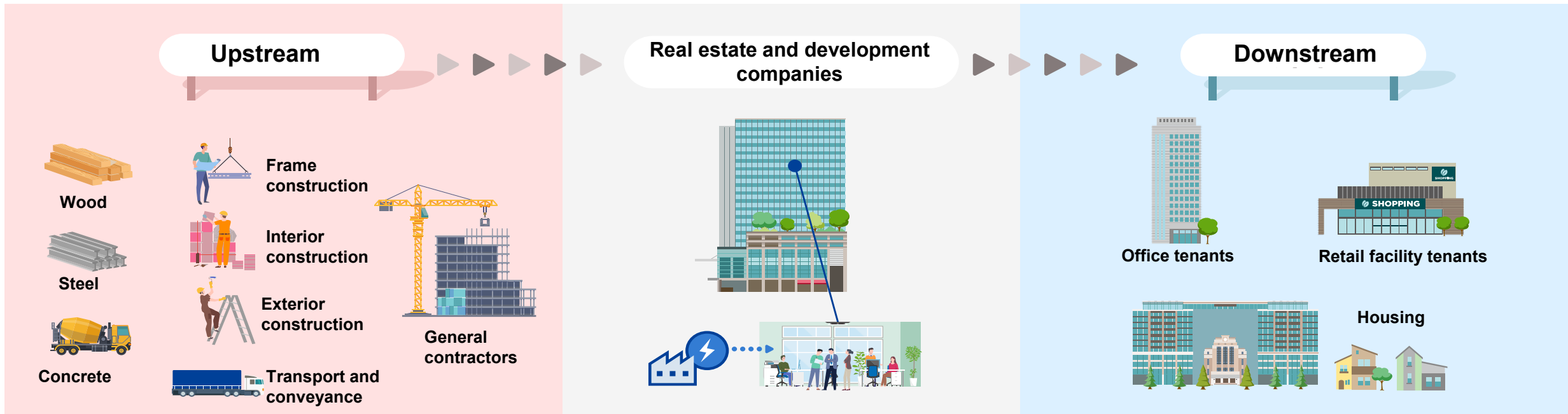
Phase 1 ▶ December 1, 2022 to January 31, 2023

Phase 2 ▶ June 23, 2023 to August 31, 2023

Conduct in seasons when electricity use goes up

Scheduled also for fall and winter 2023

Progressive decarbonization technologies created by innovation are needed in order to move further forward on efforts to reduce emissions



Support for decarbonization innovation creation as a platformer

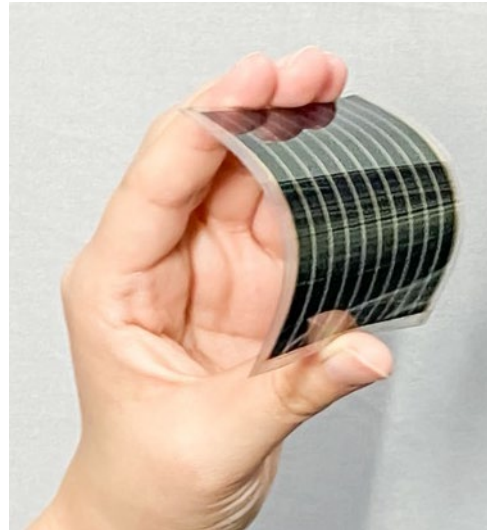
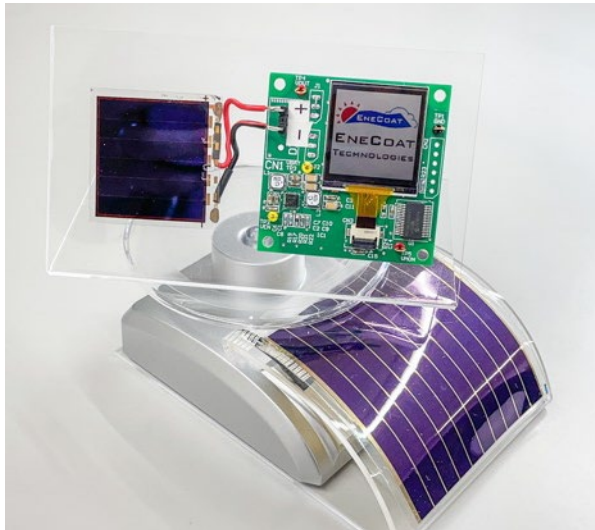
Accelerate decarbonization through **neighborhood creation promoted by open innovation and industry-academia partnerships**

Support for research and development on new decarbonization technologies

■ Joint research on perovskite solar power through an industry-academia project with Kyoto University

Demonstration experiment in an environment close to actual residences and living

Accelerate practical viability of solar cells with the **world's highest generating efficiency**



■ Invest in venture capital funds specialized in decarbonization

Invested in **three funds** in FY2022



Scientifically demonstrate how a **wood environment is good for the body** and expand the possibilities for well-being wood structures and wood architecture

Physical value

Fire resistant, earthquake resistant, durable, heat resistant

Environmental Value

Contribution to decarbonization

Economic value

Deprecation length

+ Physical value

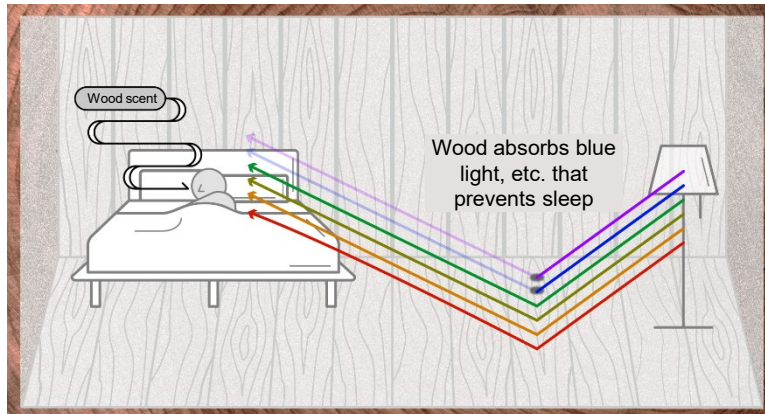
The impact a space with wood has on sleep

- University of Tokyo: Prof. Yuko Tsunetsugu, Graduate School of Agricultural and Life Sciences★
- Mitsui Fudosan: Industry-Academia Collaboration Department

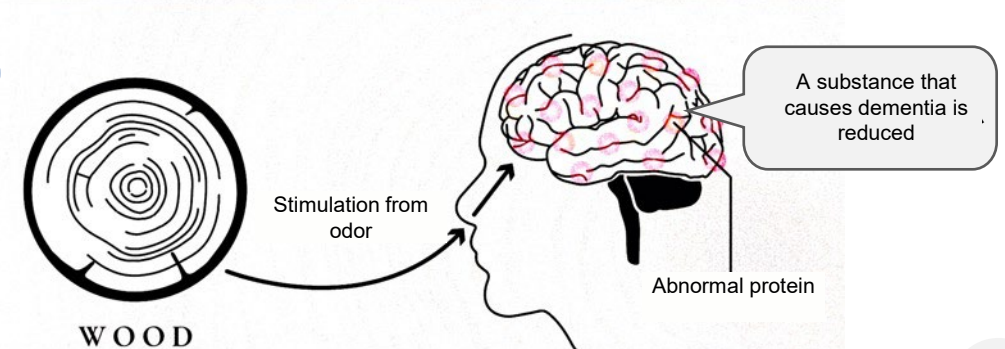
Impact of the smell of wooden materials on preventing dementia

- University of Tokyo: Prof. Haruki Takeuchi, School of Science★
 - Mitsui Home: Technology Research Institute, Sustainability Promotion Department
- ★ = Research leader

Hypothesis



Hypothesis



Taking on the challenge of creating new standards appropriate to the decarbonization era in Japan's neighborhood creation

1

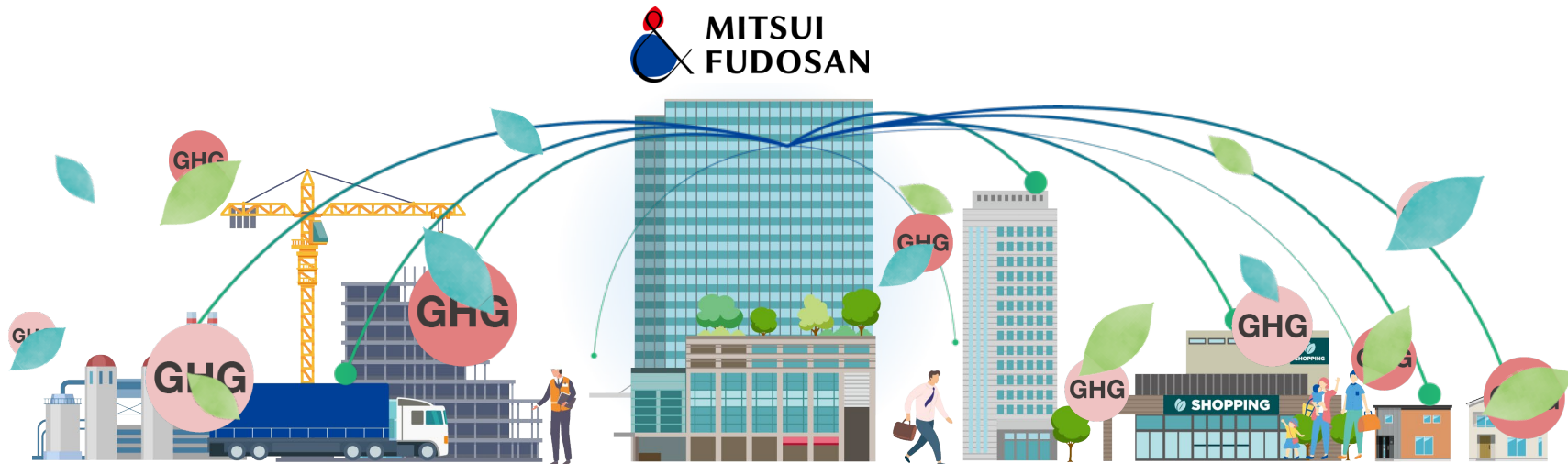
Create appropriate indicators for decarbonization
Establish and promote rules for visualization of GHG emissions

2

Reduce emissions from material manufacturing and processes through building innovations like wood office buildings

3

Propose and promote new ways of living for decarbonization



Accelerate decarbonization in urban development by promoting open innovation and industry-academia partnerships