Environment

Pursue cutting-edge environmental initiatives to realize a sustainable society through our business activities

Basic Concept and Approach

The Mitsubishi Estate Group has established an environmental management system and strives to protect the environment by promoting environmental initiatives and reducing environmental impact, while also complying with environmental laws and regulations. The Group also proposes cutting-edge environmental initiatives to ensure that its business activities play a leading role in the development of sustainable communities.

Management System

The Mitsubishi Estate Group has appointed a director in charge of environmental sustainability at Mitsubishi Estate as the person responsible for promoting the Group's environmental management, and it also designates environmental sustainability managers in each of Mitsubishi Estate's business groups and Group companies. The CSR Committee and CSR & Environmental Sustainability Sub-committee, which discuss CSR issues overall, including the environment, each meet twice a year to discuss and share information on each organization's environmental initiatives and targets.

* Please refer to pages 10-11 for information on objectives and key performance indicators (KPI).

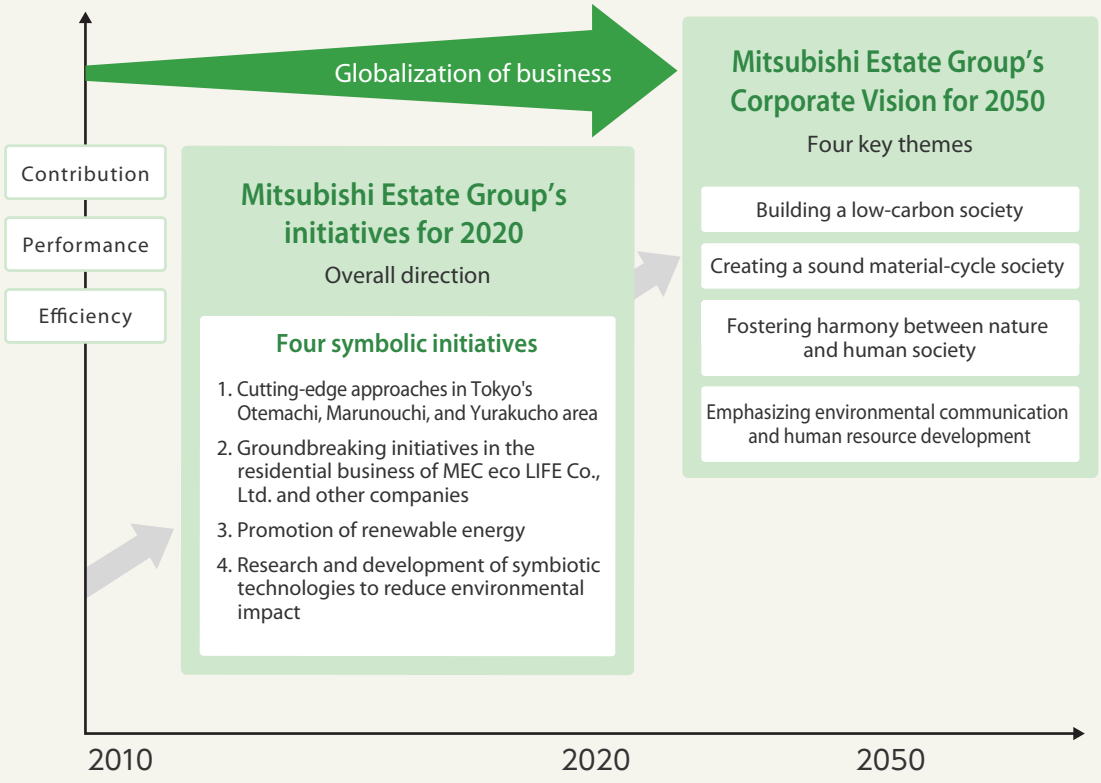
Long-Term Environmental Vision and Four Symbolic Initiatives

Mitsubishi Estate Group Long-Term Environmental Vision

The Mitsubishi Estate Group has established the Mitsubishi Estate Group Long-Term Environmental Vision, based on the Mitsubishi Estate Group's Basic Policy on the Environment, to constructively address environmental issues going forward. This vision clearly lays out the Group's stance on actively contributing to society by reducing environmental impact.

街の力を、
地球の力に。

Aiming to communicate the message of environmental coexistence and raise environmental awareness both internally and outside the company, the Mitsubishi Estate Group has established a logo and environmental slogan, "For Sustainable Cities, For a Sustainable Earth."



Mitsubishi Estate Group Basic Environmental Policy

The Mitsubishi Estate Group has established the Mitsubishi Estate Group Basic Environmental Policy, which is based on its corporate mission. The entire Group works together to implement sound environmental management.

Mitsubishi Estate Group Basic Environmental Policy

The Mitsubishi Estate Group has developed an environmental management system and strives to protect the environment by promoting environmental initiatives and reducing environmental impact, as well as complying with all environmental laws and regulations. Mitsubishi Estate is determined to ensure that its business activities play a leading role in the development of sustainable communities.

1. Building a low-carbon society
We are proactive about the efficient use of resources and energy, and encourage the use of renewable energy to contribute to the creation of a low-carbon society.

2. Creating a sound material-cycle society
We strive to reduce, reuse, and recycle in every stage of our business, including planning, development, design, construction, management and dismantlement, in order to contribute to building a sound material-cycle society.

3. Fostering harmony between nature and human society
We endeavor to foster new cultural values and to practice environmental responsibility by demonstrating concern for biodiversity and developing attractive urban spaces that harmonize with the surrounding natural environment, thus helping to build a society that lives in harmony with nature.

4. Promoting environmental communication
We proactively provide information on the environment and communicate with society on a broad range of issues in our efforts to coordinate and cooperate with a wide range of stakeholders.

5. Increasing employees' ecological awareness
In our efforts to increase employees' awareness of environmental conservation issues and ensure highly effective environmental activities, we provide environmental education and awareness programs, aiming to develop an ecologically aware workforce.

Established on May 1, 2004
Revised on January 1, 2006 and April 1, 2010

Four Symbolic Initiatives

Initiatives in Tokyo's Otemachi, Marunouchi and Yurakucho area

Hotoria Square, a Community Square that Harmonizes with the Natural Surroundings of the Imperial Palace

The Otemachi Park Building, which faces the Imperial Palace moat, was completed in January 2017. The project also included the creation of the Hotoria Square, an environmentally symbiotic green space encompassing about 3,000 square meters when combined with the green space of the Otemon Tower-JX Building, adjacent to the Otemachi Park Building. A selection of indigenous and local species are planted to create an affinity with the wooded areas in the gardens of the Imperial Palace, and a water feature cuts across the square, offering a green, refreshing space.

The square is mainly used as a space for visitors and those working nearby to relax, but a range of events are also held there to invigorate community life. Some of these are held in affiliation with 3x3 Lab Future, a hub for interaction and activities that cut across industries and sectors. The square has benches for about 60 people and also offers Wi-Fi, making it a pleasant "third place" for workers in the district.

This square is also designed to attract birds, butterflies, dragonflies and other species in order to increase biodiversity. Several target species have been defined, and feeding trees and nectar-producing plants are being grown. Bird feeders have also been set up. Shallow water baths were incorporated to make it easy for small birds to drink and bathe, and the bottoms of the baths were made with clay that retains nutritional elements. Porous rocks with minute crevices are also used to help to create an ideal environment for living creatures.

In addition, Mitsubishi Estate is implementing a biomonitoring program designed to elucidate the biodiversity network around the Imperial Place. The company holds a series of monitoring events for the public, in addition to monitoring during cleaning and greenery maintenance operations. The square has acquired the Organization for Landscape and Urban Green Infrastructure's Social and Environmental Green Evaluation System (SEGES) "green creation" certification, and the Association for Business Innovation in harmony with Nature and Community's ABINC certification (urban development and SC category).

The Group believes that meaningful community development helps to create an "interactive forest" that connects people to the environment and living creatures and gives them the sense that they are "living together" with the environment. The Group won the Special "Welcoming Garden" Prize for this plan in the Organization for Landscape and Urban Green Infrastructure's Green Environment Design Award.

Number of projects recognized with CASBEE (new construction design)/Development Bank of Japan (DBJ) Green Building/ABINC certifications

KPI **9/19/19** buildings and projects

Area of green on roofs and walls

KPI About **32,700m²**

Groundbreaking initiatives in the residential business of MEC eco LIFE Co., Ltd. and other companies

Mitsubishi Jisho Residence Wins ABINC Award for Biodiversity Program

Mitsubishi Jisho Residence has expanded the BIO NET INITIATIVE, The Parkhouse's biodiversity preservation program, originally launched in February 2015, to a total of 100 condominiums under The Parkhouse brand nationwide as of March 2017. The company plans the trees and plants for each property in a manner that will help to preserve biodiversity, regardless of the property's size and land area. In addition, in 2015 Mitsubishi Estate renovated the inner courtyard of Setagaya House, a condominium it owns for employee housing, transforming it into biodiversity-promoting environment. This "experimental garden" is also used for monitoring and communication programs involving residents.

In October 2016, Setagaya House won the Award for Excellence at the First ABINC Awards, given to ABINC-certified properties that make particularly impressive contributions to educating about the Association for Business Innovation in Harmony with Nature and Community (ABINC) and bringing biodiversity into the mainstream. The Parkhouse Nishi Shinjuku Tower 60 also won a special award.

The Parkhouse Nishi Shinjuku Tower 60

Promotion of renewable energy

Four Premium Outlets Switch to Renewable Energy

The four Premium Outlets operated by Mitsubishi Estate-Simon Co., Ltd. (in Gotemba in Shizuoka Prefecture, Sano in Tochigi Prefecture, Ami in Ibaraki Prefecture and Shisui in Chiba Prefecture) switched to renewable energy using Renewable Energy Certificates for some of their energy consumption, starting in April 2016.

As a result, 8 million kWh, equivalent to 20% of the 40 million kWh in annual electricity consumption at the four complexes, is now covered by renewably energy. This is the largest such initiative for commercial facilities in Japan.

In addition, Mitsubishi Estate-Simon has introduced a carport-type solar power generator for captive consumption that produces an estimated 1.15 million kWh in power annually at its Ami Premium Outlet. The company will continue to focus on building energy-saving facilities to contribute to reductions in environmental impact.

Ami Premium Outlet's carport-type solar power generator for captive consumption

Solar power output

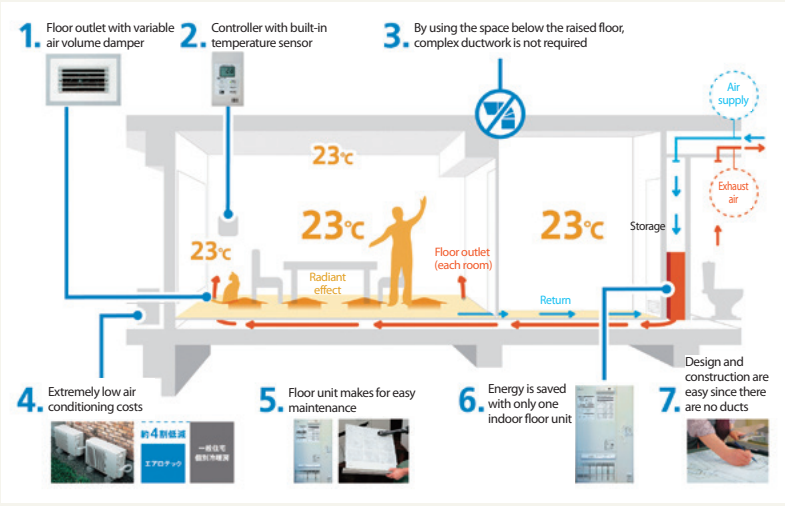
KPI About 7,540kw/17 sites

Research and development of symbiotic technologies to reduce environmental impact

Start of Experimental Trials for New Condominium Aerotech

Aerotech is a central air conditioning system that maintains a comfortable temperature everywhere in a building while also conserving energy. Building on over 20 years of use in single-family homes at Mitsubishi Estate Home, since 2006 Mitsubishi Jisho Residence has been offering Condominium Aerotech, a condominium version of the Aerotech system. With the aim of further popularizing it, the company began experimental trials in March 2017 to develop an enhanced version called "New Condominium Aerotech." The new system aims to improve the comfort of living spaces and lower the cost of installation. The air conditioner sends cooled or heated air into the space below the raised flooring, which is then blown out from outlets set in the floor of each room. Since the space below the raised flooring stretches across the entire residence and is filled with cooled or heated air, the living areas are pleasant with no temperature irregularities. This is also expected to be effective in preventing health problems that come from sudden changes in temperature within a residence. Moreover, the space below the raised floors is used instead of ventilation ducts in the ceiling, thus lowering the need for duct installation during construction and reducing the cost of adopting this system.

Mitsubishi Estate believes the New Condominium Aerotech will also be effective in raising the value of renovated condominiums and will introduce this system both in newly built condominiums and in condominium renovations.



Design and construction methods for air conditioning system using New Condominium Aerotech

Diverse initiatives to improve environmental performance of condominiums

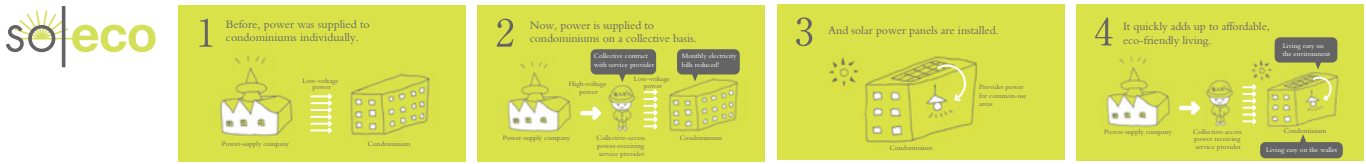
Mitsubishi Jisho Residence Co., Ltd. employs the Five Eyes process to ensure the quality of its residences. Eco Eyes is one of the five. The company uses various creative approaches to support eco-friendly, affordable lifestyles.

1 *Soleco* power systems save electricity and money

Soleco is an environmental system that balances environmental friendliness with affordability by reducing electricity costs for condominium units and shared areas. This is achieved by combining high-voltage collective power systems with solar power systems in condominiums.

Rate of annual adoption for *soleco* system

KPI **76%**



Note: KPI calculations are for newly built condominiums transferred en bloc in fiscal 2016 (with the exception of some properties from joint businesses, such as projects not managed by the company).

2 Various techniques enhance insulation effectiveness

Mitsubishi Jisho Residence uses a range of techniques to enhance insulation effectiveness, such as applying external and internal insulation, taking measures to prevent dew condensation and using multi-layered glass.

In line with the 2013 energy conservation standards for residences that went into full effect on April 1, 2015, the company aims to earn insulation performance level 4 and primary energy consumption level 4 for all the residences for which it makes application for building confirmation thereafter.

In fiscal 2016, The Parkhouse Futakotamagawa Midori no Mori and The Parkhouse OIKOS Mikunigaoka were both certified as low-carbon buildings under Japan's Law on the Promotion of Low-Carbon Cities.

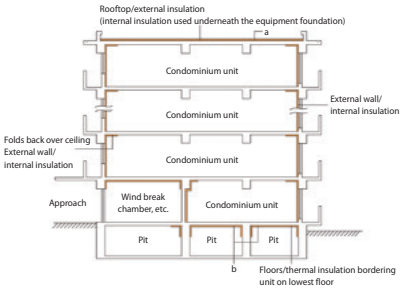
Rate of annual adoption for heat insulation functions level 4

KPI **100%**

Rate of annual adoption for primary energy consumption level 4

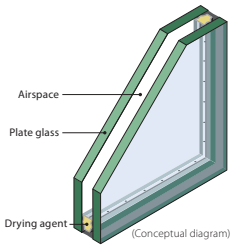
KPI **87%**

Application of thermal insulating material (conceptual diagram)



+ Countermeasure for dew condensation

+ Multi-layered glass



= Heat insulation functions / primary energy consumption **level 4**

Note: KPI calculations are for condominiums for which planning permission was granted from April 1, 2015 and newly built condominiums transferred en bloc in fiscal 2016 (with the exception of some properties from joint businesses, such as projects not managed by the company). Properties in the Sapporo and Sendai regions are not included in the KPI calculations.

3 Highly efficient devices save energy

In the condominiums sold by Mitsubishi Jisho Residence, high-efficiency equipment is adopted, such as shower heads that conserve hot water, faucets that conserve hot water, bathtubs that retain heat and toilets that conserve water. This contributes to the creation of a pleasant lifestyle that takes both the environment and economy into account.

Rate of annual adoption for high-efficiency appliances (hot water heaters/LED equipment/ ultra-water-conserving toilets)

KPI **100/95/95%**

Notes:
KPI calculations are for newly built condominiums transferred en bloc in fiscal 2016 (with the exception of some properties from joint businesses, such as projects not managed by the company).
The adoption rate for LED devices is calculated including properties in which some shared spaces or dedicated spaces use LED devices.

Reductions in heat discharge, the cause of the heat island phenomenon

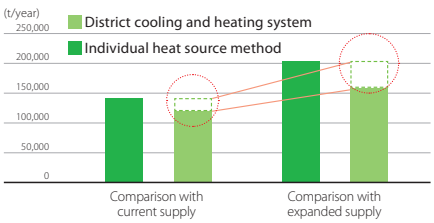
Marunouchi Heat Supply Co., Ltd. operates large-scale district cooling and heating systems, an energy system that protects the urban environment. At the company's plants, heat for heating and cooling use is produced and managed collectively, and supplied to the Otemachi, Marunouchi and Yurakucho area. By using district cooling and heating systems, air pollution can be prevented and CO2 emissions reduced compared to levels when each building is cooled and heated individually. In addition to saving energy, the system also reduces the amount of heat emitted to the atmosphere and thus helps mitigate the heat island phenomenon, a state in which the temperature in cities is higher than surrounding areas. We will continue to move ahead with initiatives like this to help conserve the environment.

Number of buildings using district heating and cooling, and their total floor space

KPI **115 buildings/7,429,000m²**

Comparison of environmental effect of district cooling and heating system and individual heat source method

Comparison of CO_2 emissions



Currently, CO_2 reductions achieved with district cooling and heating systems are equivalent to about 3,100ha of forest. If this system is introduced to all companies in the area, the reductions would amount to about 4,200ha, and the reductions would improve by 35%.

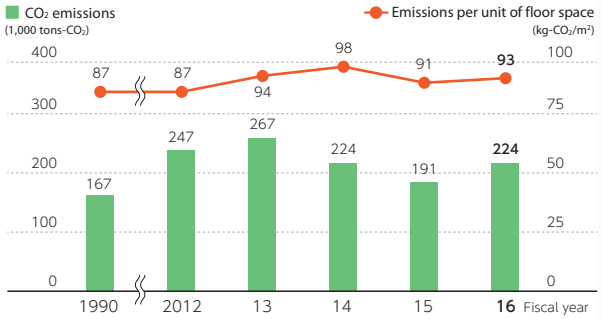
Building a Society with a Lower Carbon Footprint

Initiatives to Reduce CO_2 Emissions in Building Operations and Management and Energy Consumption

TheCO_2 emissions and energy consumption of Mitsubishi Estate's 23 ISO14001-certified buildings* in fiscal 2016 are shown in the graphs below. Energy consumption per unit of floor space has been on the decline since the 2011 Great East Japan Earthquake as a result of repairs to facilities to raise energy conservation performance (such as replacing lights with LED lighting) and other energy-saving activities.

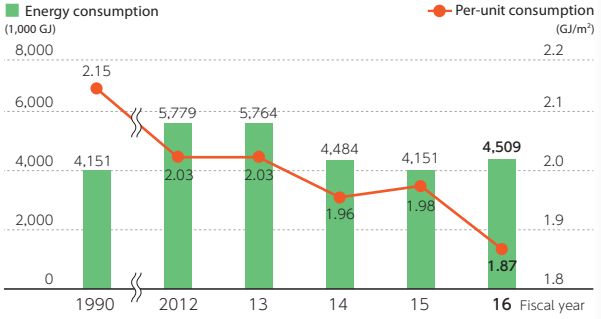
We will continue to strive to rationalize energy use in buildings overall in fiscal 2017.

CO_2 emissions and CO_2 emissions per unit of floor space from Mitsubishi Estate's ISO14001-certified buildings



* CO_2 emissions are calculated using the emissions coefficients determined for individual electrical power suppliers.
* The data for 1990 includes buildings prior to renovations (such as the former Marunouchi Building).

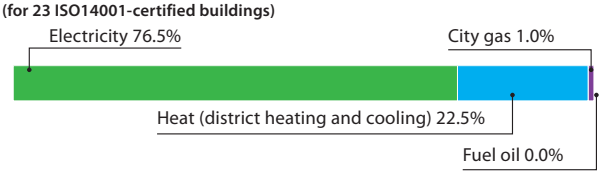
Energy consumption and energy consumption per unit of floor space in Mitsubishi Estate's ISO14001-certified buildings



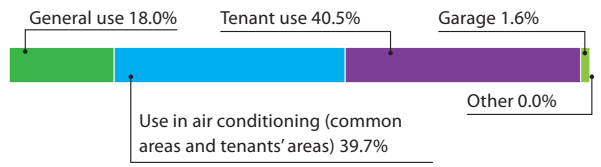
* The number of ISO-certified buildings changes each fiscal year due to renovations and sales/purchases.

Collaborating with Tenants to Conserve Energy

Fiscal 2016 energy consumption by use
(for 23 ISO14001-certified buildings)



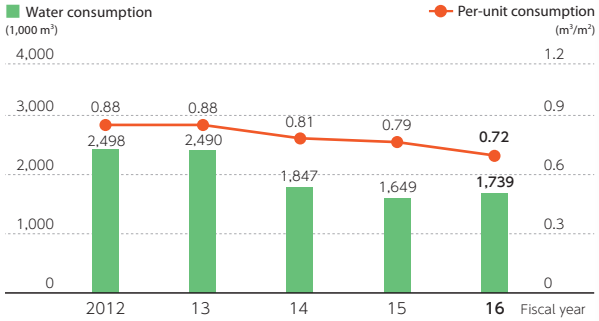
Fiscal 2016 energy consumption by application
(for 23 ISO14001-certified buildings)



Helping Society to Recycle More

Effective Consumption of Water Resources in Building

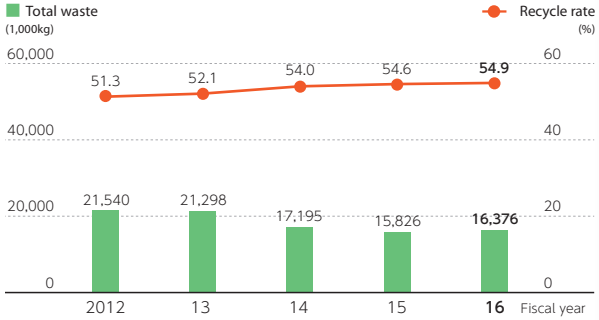
Water consumption and water consumption per unit of floor space in Mitsubishi Estate's ISO14001-certified buildings



* Number of buildings included in scope of data may differ by fiscal year due to renovations and sales/purchases.

Waste Reduction and Recycling Initiatives in Buildings

Total waste and recycle rates for Mitsubishi Estate's ISO-14001 certified buildings



* Number of buildings included in scope of data may differ by fiscal year due to renovations and sales/purchases.

Mitsubishi Estate Group's Environmental Data

Energy use and CO_2 emissions reported under Japan's Energy Conservation Law (fiscal 2016)

	Overall	Office buildings	Commercial facilities	Hotels	Other
Energy use (1,000 kl/year)	262	201	43	11	7
Unit consumption (kl/m² per year)	0.034	0.036	0.048	0.050	0.008
CO_2 emissions (1,000 t-CO_2/year)	505	384	85	21	15
Unit emissions (t/m² per year)	0.066	0.069	0.095	0.096	0.016
Number of target facilities (buildings)	108	64	18	8	18
Floor area (1,000 m²)	7,652	5,590	899	220	944

* Compiled for main buildings for which information on energy-saving measures is reported in compliance with the Energy Conservation Law (excluding small buildings with a floor area less than 1,000 m²).
* This table is prepared on the basis of the information submitted by Group companies in compliance with the Energy Conservation Law, with some additions, and may differ from the actual figures submitted.

Energy use/CO_2 emissions

KPI **262,000kl/505,000t a year**

Waste generated/water used

KPI **48,069t/5,222,000m³ a year**

Effectively Using Existing Buildings and Invigorating Communities with the Re-building Business

Since May 2014, Mitsubishi Jisho Residence Co., Ltd. has been involved in the Re-building Business, where it renovates and rents older small- and medium-sized buildings. In 2017, the company finished the renovation of the ParkRex Hirakawa-cho, the largest project undertaken thus far. It opened in March with full occupancy.

The building, which was built 44 years ago, has been seismically retrofitted. The renovation plan treated the simplicity of the building's bare skeleton frame as a main feature, yielding a stylish, pleasant space. IT companies and others that value originality are using this building.

A wide variety of plants grow in the outdoor space on the first floor, where a sidewalk café is also located. A Sound Museum, which displays sound-related artworks, has been set up, enriching the neighborhood.

The Re-building Business aims to complete 15 buildings in the first three years (2014–2016), and then another 15 in the next two years (2017–2018). This business aims to address the social demand for effective use of existing structures, and multifaceted expansion is planned.

The company is also entering the condominium renovation business. Its first project in this field was the Parkremore Shirokanedai Sanchome. The grand opening of the model unit was in January 2017.

Floor for stores

Before renovation

After renovation

After tenant construction

Outdoor space

Before renovation

After renovation

Small- and medium-sized building renovations/condominium renovations

KPI **12 buildings/ 487 units**

Fostering Harmony Between Nature and Human Society

Expanding the Use of Japan-Grown Timber: Project to Raise the Value of Japan-Grown Timber

Mitsubishi Estate Home Co., Ltd. proactively uses forest thinnings and small-diameter trees for its 2x4 structural materials, aiming to expand the use of Japan-grown timber in wood-frame homes overall. The percentage of Japan-grown timber used in structural materials by the company now exceeds 50%, which is one of the highest among builders of 2x4 homes in Japan.

Mitsubishi Estate Home is also effectively utilizing and expanding its use of timber grown in Yamanashi Prefecture as part of the Project to Raise the Value of Japan-Grown Timber. The project works in affiliation with the "Experience Nature" Project, an activity that promotes interaction between urban and rural residents in Hokuto City in Yamanashi Prefecture.

Examples of use of domestic timber

Mitsubishi Estate Housing Components Co., Ltd. promotes the use of Japan-grown timber in structural materials for single-family homes, and in August 2010 the company obtained FSC-CoC certification, an international standard for distinguishing sustainably-grown timber from other timber during the processing and distribution stages.

FSC® logo mark issued by the Forest Stewardship Council® certifies that the wood or fibers used in the product were produced from forests managed properly in terms of the environment, society and the economy. The mark provides a guarantee that the forest of origin was assessed by an independent third-party organization based on principles and standards stipulated by the FSC.

FSC-N002014 http://www.fsc.org

Rate of use of Japan-grown timber

KPI **Over 50%**

Education Programs on Biodiversity Conservation for Residents

Mitsubishi Estate Co., Ltd., Mitsubishi Jisho Community Co., Ltd., MEC eco LIFE Co., Ltd. and Mitsubishi Jisho Residence Co., Ltd. work together to create communities designed with biodiversity and harmony with nature in mind. As part of this effort, the companies include greenery at The Parkhouse built-for-sale condominiums in a way that will optimize biodiversity by, for example, incorporating local indigenous species. This creates green spaces that serve as stopovers for the various creatures that fly through the area.*

In addition to creating spaces like these, the companies provide residents with opportunities to enhance their curiosity about and interest in the natural environment. After holding a nature observation meetup as a trial run with Group employees at Setagaya House, Mitsubishi Estate's company housing, in October 2016 a similar event was held around The Parkhouse Chitosekarasuyama GLORIO for residents.

Nature observation meetups were also held in fiscal 2016 at Mizumoto Park and Sakuragaoka Sumireba Shizenteien for members of the Mitsubishi Jisho Residence Club, who are residents of existing properties. The Group plans to expand these events to areas around its branches.

* See page 26 for details on biodiversity programs at The Parkhouse

Enjoying the nature observation meetup at The Parkhouse Chitosekarasuyama GLORIO