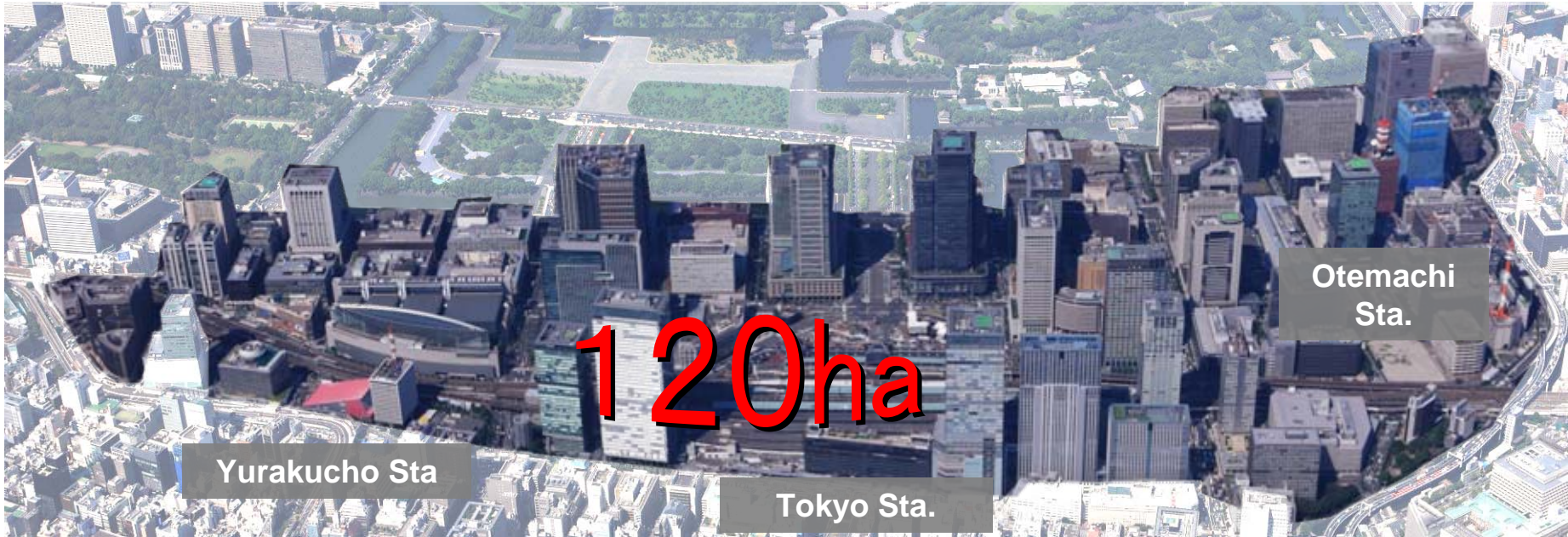




# **Marunouchi Park Building**

**~Example of a low-carbon building  
located in Tokyo~**

# ■ Otemachi, Marunouchi and Yurakucho Areas



- Total Area: **Approximately 120ha** (Area designated within the Machi-tsukuri Guidelines (Town Planning Guidelines))
- Business center representative of Japan since the Meiji Era
- Total Employees: **231,000** / Total Companies: **4,000**
  - 76 companies in the area are listed on the Tokyo Stock Exchange 1st section
  - The consolidated revenue of these companies is about 121 trillion yen (approximately 23% of Japan's GDP)
- Organization of the Otemachi, Marunouchi and Yurakucho Redevelopment Project Council composed of mostly local real estate owners.  
Total Participating Organizations: **97** (Established in July 1988)
- Redevelopment Progress in Recent Years:  
Completed Buildings: 21 (2000 to 2010), Buildings under Construction: 4 (2010 to 2013)



# ■ Development Overview and Concepts

- Marunouchi Redevelopment Project -- Phase 1 of the second stage

The second stage of this project aimed to further enhance awareness of and stimulate greater interest in the “Marunouchi brand”.

- Restoration of the Mitsubishi Ichigokan**  
Restore as much as possible of the Mitsubishi Ichigokan, the first office building in the Marunouchi area, to its original condition and use as a museum
- Creation of an inner courtyard abundant in greenery under the name of the Ichigokan Plaza**
- Consideration given to coexisting in the local environment.**

	Marunouchi Park Building	Mitsubishi Ichigokan
Scale	B4F to 34F	B1F to 3F
	3 penthouse floors, approx. 157m	Approximately 15m
	Total floor space 205,000m <sup>2</sup> * Mitsubishi Ichigokan area: Total floor space 6,000 m <sup>2</sup>	
Start of construction	February 2007	
Completion	April, 2009	



# ■ Adoption of Diverse Development Methods

## ▪ Decision to develop a Priority Urban Regeneration Zone

As part of high-level efforts to contribute to urban redevelopment, restoration of the Marunouchi area—a “special urban regeneration zone” under the Japanese Act on Special Measures concerning Urban Reconstruction—was carried out with the aim of **improving urban infrastructure** and **creating an area that will serve as a center for cultural exchange** (press release dated August 22, 2006).

## ▪ Designated as an “exceptional floor area ratio district”

The application of the “exceptional floor area ratio system” made it possible to utilize the unused area within the JR Tokyo station.

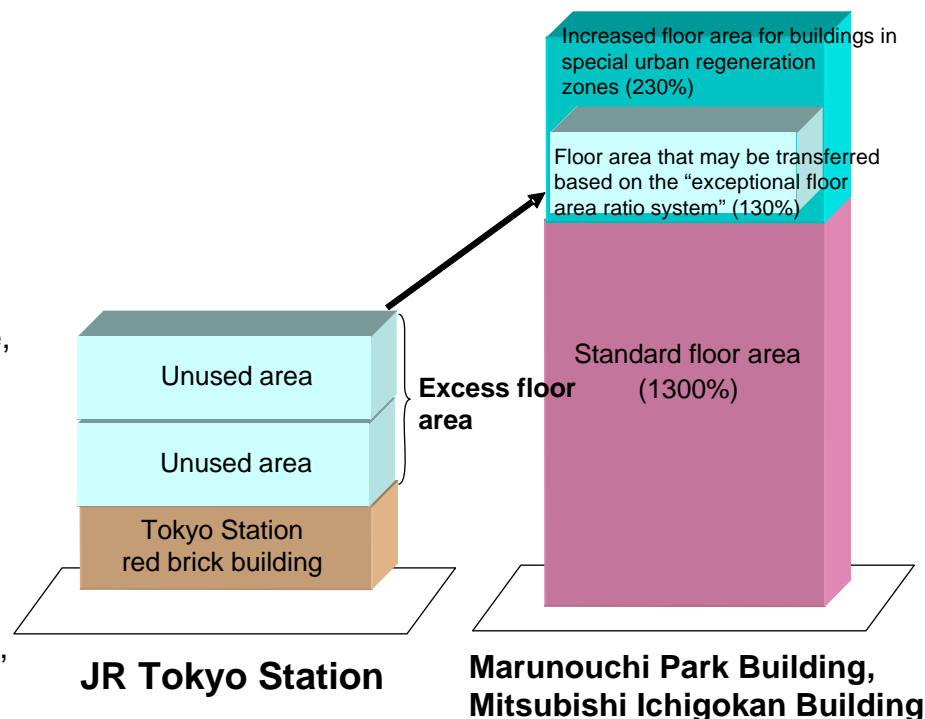
## ▪ Receives approval as a “Private Sector Urban Renewal Project”

The project received approval on November 8, 2006, as a Private Sector Urban Renewal Project under the Japanese Act on Special Measures concerning Urban Reconstruction, that seeks to rejuvenate urban regeneration in Tokyo and strengthen global competitiveness of the Japanese economy through measures such as improving urban infrastructure, enhancing opportunities for cultural exchange, and creating attractive urban spaces.

## ▪ Receives approval as a “Pilot project for Cool City Central Zone”

As a project that aims to alleviate the city’s heat island effect and contribute to the widespread adoption of related technologies, the Marunouchi Redevelopment Project was certified eligible to receive subsidies for greening of facilities, installing permeable pavement surfaces that have excellent water retention properties, use of highly reflective paints and other measures.

### Application of the “exceptional floor area ratio system”



# ■ A Unique Project: Restoration and Utilizing the Mitsubishi Ichigokan Building

- The Mitsubishi Ichigokan Building was the first office building to be constructed in the Marunouchi area, Japan's first modern business district. (Built 1894, in brick.)
- Designed by the British architect, Josiah Conder.
- Demolished in 1987 due to concerns about its earthquake resistance and in response to social trends in a period of rapid economic growth.

→ The founding vision for Marunouchi was not simply as a business district, but as a district where culture flourished. We are therefore reviving the Ichigokan as **the Mitsubishi Ichigokan Museum**, rekindling the original vision for the Marunouchi area.

→ The restoration took place on the basis of the initial plans, diagrams and photographs from when it was demolished. Particular care was paid to the plans, construction methods, and materials in order to restore it as faithfully as possible to its original condition.





# ■ A Unique Project: Mitsubishi Ichigokan Plaza

## •The “Oasis of Marunouchi”

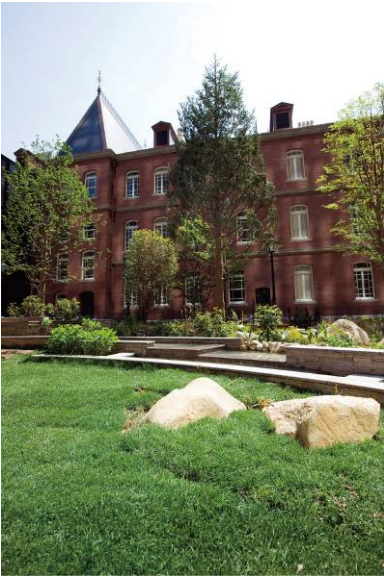
- A rich variety of seasonal plants can be seen in this inner courtyard garden of approximately 1,500 m<sup>2</sup>.
- The garden is home to about 150 rose plants of approximately 40 different varieties, including some that were cultivated in the 19th century in England and specially imported into Japan for planting in the Ichigokan Plaza.
- The four sculptures that are on display will be changed periodically with the cooperation of the Hakone Open-Air Museum.
- A water fountain and a small waterfall have also been built to help transform the garden into a place where people working in the surrounding buildings can rest and relax.

## •The “planted column”

Three round columns, that are architecturally essential and had to be located in the garden, have been covered with greenery up to a height of more than 8 meters. As many as 20 different varieties of plants have been randomly planted on the grid shaped base layer of each column.

## •Recreation of gaslights with the help of Tokyo Gas

Ten gaslights identical to those that lined the Babasaki-dori Avenue in the Meiji era have been installed in the garden.



Toshio Yodoi's A Park in Rome (1976)  
H120 x W185 x D90 cm



Cornelis Zitman's Siesta (1982)  
H48 x W74 x D112cm



Kyoko Asakura's Torso (1970)  
H53 x W114 x D48cm



The first and main display item:  
Henry Moore's 'Seated Woman'  
(will be changed approximately  
every three years)

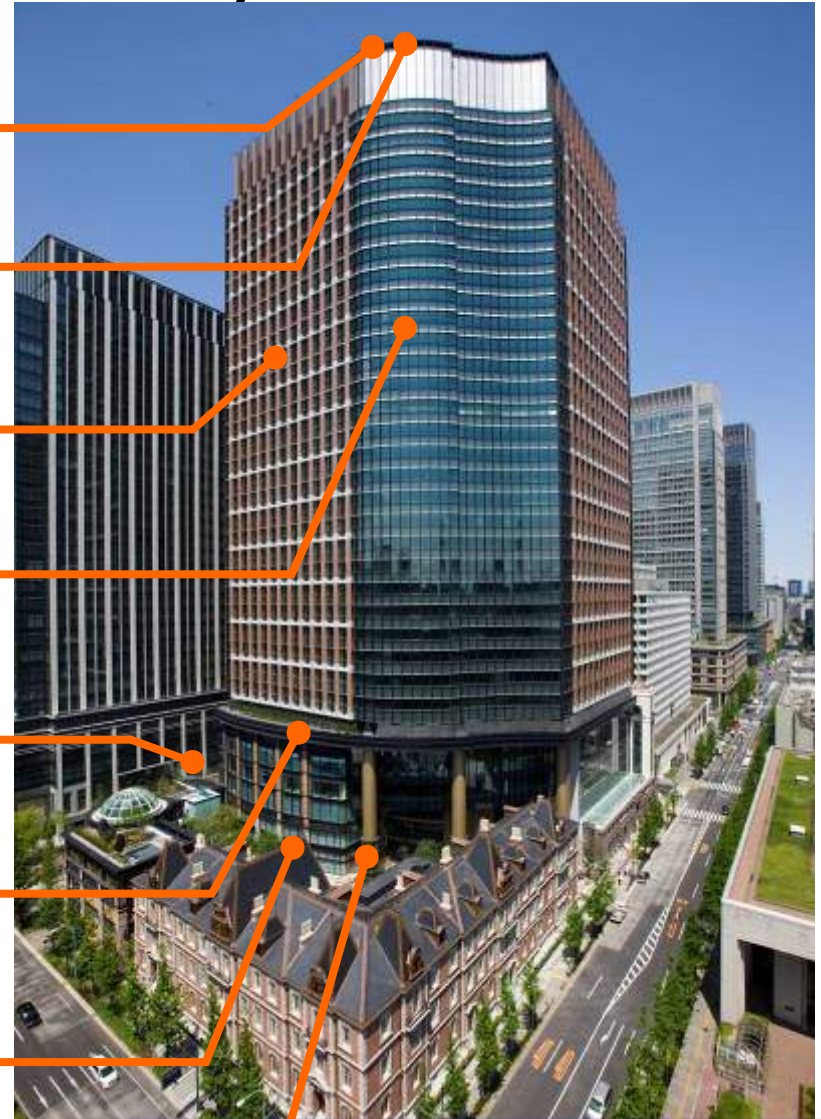


Seated Woman (1957) H160 x W142 x D104 cm

This sculpture by Henry Moore depicts a woman seated in a comfortable position. It has been placed in the center of the Ichigokan Plaza and can be viewed from the “planted columns”, as well as from the Ichigokan Museum.

# ■ Measures Actively Adopted to Ensure Coexistence with the Local Environment (Overview)

- 1 Solar power generation
- 2 Cool roof
- 3 Ultra high-efficiency lighting apparatuses (single-lamp type)
- 4 Airflow window system
- 5 Water circulation system
- 6 High energy-saving functions achieved in the DHC facilities
- 7 Formation of a plaza abundant in greenery (Ichigokan Plaza)
- 8 Water-retention coating, dry mist



Approx. 30% additional energy-saving over metropolitan office buildings of the same size targeted (design values.)



# ■ Environmental Initiatives (1)

## ■ Solar power generation

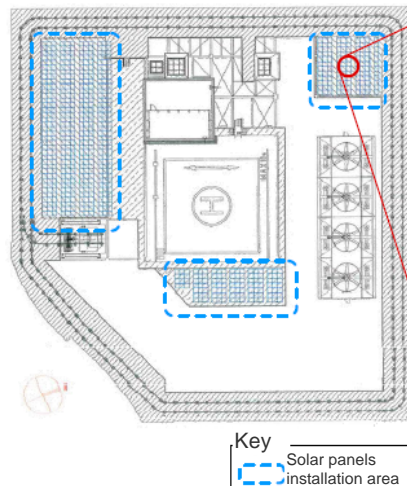
Solar power generation panels have been installed wherever possible on the rooftop.

⇒ Maximum output: **Approx. 60kW**

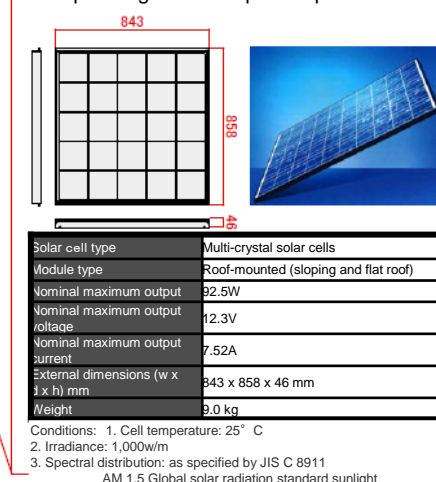
(equivalent to the amount of electricity required to light up the entire area surrounding the Marunouchi Park Building at night)



Solar power generation facilities at the Marunouchi Park Building



Solar power generation panel specifications



## ■ Cool roof

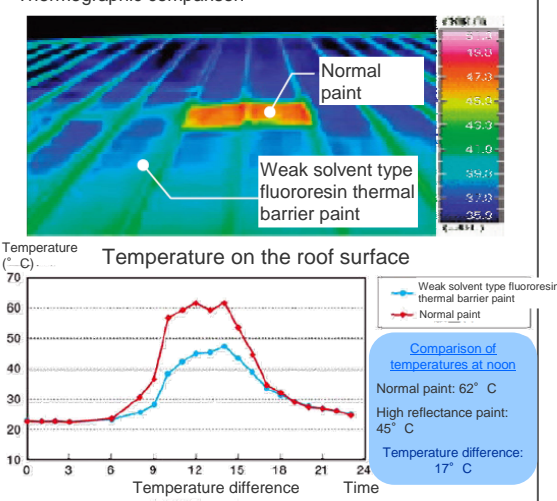
A high reflectance paint with reflective pigments has been applied to the roof of the building to help reduce the rise in indoor temperature due to insolation. During the day the paint acts as a thermal barrier by reflecting near-infrared rays of sunlight efficiently, while also containing the accumulation of heat within the building, thereby reducing heat dissipation at night.

⇒ Solar reflectance rate: **Approx. 60%**

Marunouchi Park Building Cool Roof (PH1FL)



Thermographic comparison





# ■ Environmental Initiatives (2)

## ▪ Ultra high-efficiency lighting

The offices on the standard floors feature highly efficient lighting fixtures with improved shape, colors and method of painting that better reflect heat and reduce glare (through louvers), while maintaining the lighting intensity required in an office (average of 700 lx) and reducing energy consumption significantly.



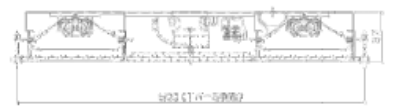
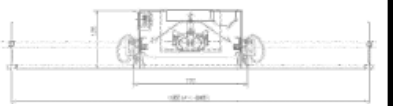
⇒ energy consumption reduced by approximately 36% compared to earlier lighting fixtures

## ▪ Airflow window system

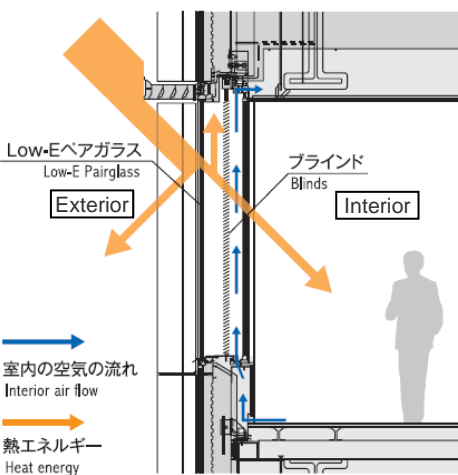
The outer windows in the offices on the standard floors are fitted with Low-E Pair Glass, a low-emissivity dual layered glass. In the interior, the offices are equipped with automatically operated blinds (with a solar light tracking function) and an Airflow Window System that efficiently circulates the air inside. As a result, the reflux of heat from the exterior walls and the shielding of sunlight have improved.

PAL value (office areas): 193.3

Comparison of lighting fixtures

Earlier lighting – 2-lamp type (with white parallel louvers)	Highly efficient lighting (with white parallel louvers)
	
FHP45w x 2 lamps Lighting intensity 750 lux	FHP45w x 1 lamp Lighting intensity 700 lux
 • Angle of reflection: width 26° , length 30°	 • Increased efficiency by lowering the lamp position • Highly reflective white powder coating on the reflective plate • Angle of reflection: width 20° , length 30°

Airflow Window System Concept Diagram and Photo



# ■ Environmental Initiatives (3)

## •Greening (above-ground, rooftops and walls)

Extensive greening of rooftops and wall surfaces has been carried out, including in the Ichigokan Plaza and the areas surrounding the facilities, as well as the annex building rooftop, the lower floors of the Tower room, and the rounded columns in the Plaza.

- Total area covered with plants
- Above-ground... Approx. 1500 m<sup>2</sup>
- Rooftops... Approx. 300 m<sup>2</sup>
- Walls... Approx. 800 m<sup>2</sup>
- Total Approx. **2100 m<sup>2</sup>**

## •High water retention pavement surfaces and Dry Mist (mist spraying system)

High water retention blocks, that contribute to alleviating the heat island effect by enhancing evapotranspiration from pavements, have been used extensively in the Ichigokan Plaza.

In some areas that are exposed to long periods of sunlight everyday during the summer, water is supplied via underground pipes. Rainwater that is accumulated and stored in tanks in the Tower room is used for this purpose.

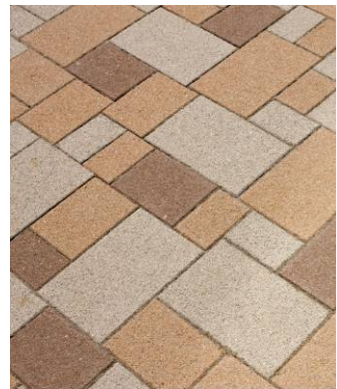
A mist spraying system, Dry Mist, has been installed in two of the rounded columns in the Ichigokan Plaza. When summer temperatures rise beyond a preset value, the system automatically sprays a fine mist into the air that evaporates and reduces the temperature of the surrounding area.

### High water retention pavement surfaces

Area with water retention pavement blocks that utilize water supplied by underground pipes : **780m<sup>2</sup>**  
Area covered with rainwater retention pavement blocks: **150 m<sup>2</sup>**



Water retention pavement



Dry Mist

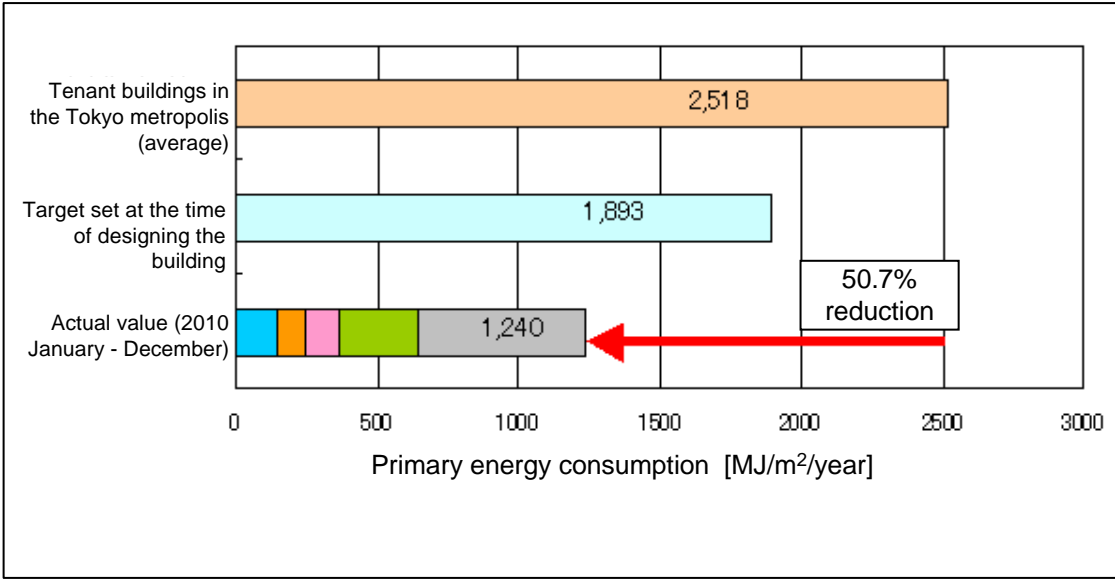
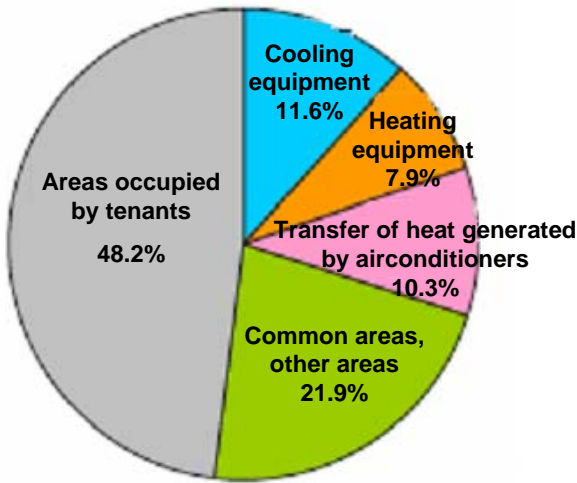




## ■ Environmental Initiatives (4)

# Reference: Environmental-performance related topics

Primary energy consumption per unit in office areas in fiscal year 2010:  
**1,240 MJ/m<sup>2</sup>/ year** (55.9 kg-CO<sub>2</sub>/m<sup>2</sup>/year)



The first building to acquire the Development Bank of Japan's Green Building Certification

Received the highest award—the Platinum Certification

DBJ Green Building	
Platinum (プラチナ) ★★★★	Awarded to buildings with the highest levels of environmental and social considerations in Japan
Gold (ゴールド) ★★★	Awarded to buildings with extremely high levels of environmental and social considerations
Silver (シルバー) ★★	Awarded to buildings with excellent environmental and social considerations
Bronze (ブロンズ) ★	Awarded to buildings with good environmental and social considerations





# **A Love for People A Love for the City**