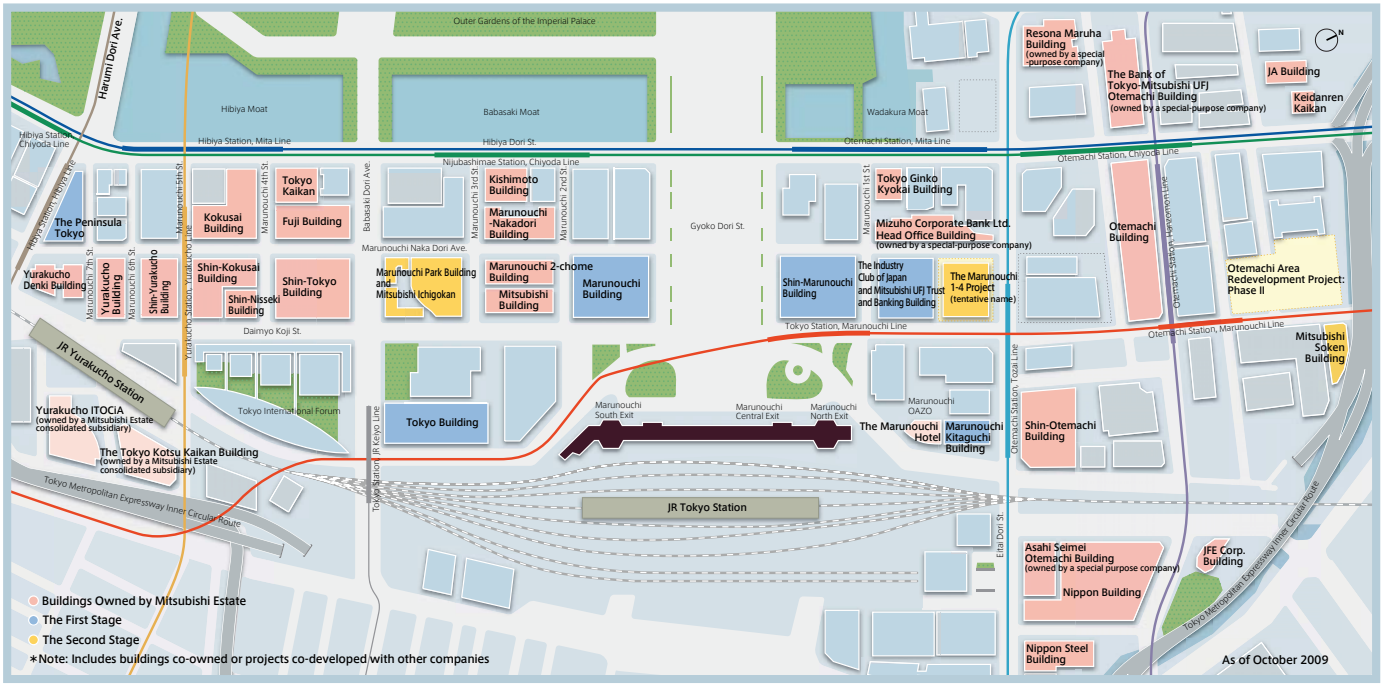
# From Inspiration to Reality

## Environmental initiatives in the Otemachi, Marunouchi and Yurakucho district in 2009

Tokyo's Chiyoda ward, which was selected by the Japanese government as an Eco-Model City in January 2009, used the environmental initiatives in the Otemachi, Marunouchi and Yurakucho district as one of its models. In the second stage of the Marunouchi redevelopment project, Mitsubishi Estate aims to build cities that are integrated with the environment, take up a wide range of environmental measures, and contribute to the sustainable development of the district—all the while working in close cooperation with industry, government, academia and the private sector.



## Affiliation with Eco-Model Cities Initiative

The Otemachi, Marunouchi and Yurakucho district is Japan's most important business center, covering about 120 hectares and bordered by Tokyo Station and Yurakucho station on one side and the Imperial Palace on the other. Owning about one-third of the properties in this district, Mitsubishi Estate has taken a leading role in promoting the sustainable development of the district.

In 1998, Mitsubishi Estate and approximately 60 companies formed the Otemachi Marunouchi Yurakucho District Redevelopment Project Council (OMY Council). In 2007, the OMY Council presented its Environmental Vision for the Otemachi, Marunouchi, and Yurakucho District, outlining its design for an eco-friendly urban model.

In January 2009, the government selected Chiyoda ward as one of its Eco-Model Cities, making the environmental initiatives underway in this district a symbolic model. Chiyoda ward has passed a Global Warming Solutions Ordinance, which took effect in January 2008. In addition, in a first for Japan, the Tokyo Metropolitan Government has revised regulations to mandate reductions in the total amount of greenhouse gases for large business establishments, including office buildings. These new programs by the ward and the metropolitan government echo the Mitsubishi Estate Group's ideas for building a low-carbon society and the environmental measures that translate these ideas into action. Mitsubishi Estate will continue to work closely with the government and other stakeholders to develop cities with low environmental impact.

### High hopes for Mitsubishi Estate's environmental management

**Yasuhiro Ohata**
Director, Environmental Safety Department, Chiyoda City

Curbing $CO_2$ emissions in Chiyoda ward is a pressing issue, given that its redevelopment is boosting floor space by 1% every year. However, this problem can only be resolved by collaborating with all the parties involved, and we sought to lay the groundwork for this by applying for participation in the Eco-Model Cities Initiative. I am very hopeful that Mitsubishi Estate will continue to present its vision for the low-carbon society of the future to the world through its programs in the Otemachi, Marunouchi, and Yurakucho district. I also expect that Mitsubishi Estate's expertise in working with tenants to implement energy-saving measures will be constructively applied to Chiyoda ward's small- and medium-sized buildings as well.

## Completion of Marunouchi Park Building and Mitsubishi Ichigokan moves project to its second stage: Extending and expanding

In the first stage of the Marunouchi redevelopment project, launched in 1998, Mitsubishi Estate rebuilt six buildings, including the Marunouchi Building and the Shin-Marunouchi Building. The second stage, which began in 2008, aims to expand the area covered by the urban development and to deepen the district's cultural, artistic and historical functions. As the first step in this endeavor, the Marunouchi Park Building and Mitsubishi Ichigokan were completed in April 2009.

As the flagship eco-friendly project in the Otemachi, Marunouchi and Yurakucho district, a wide range of measures to reduce energy consumption and environmental impact are being adopted in the Marunouchi Park Building. The Ichigokan Plaza, adjacent to the Marunouchi Park Building, has a lawn and a water feature so that it can serve as a place of relaxation for the people who work in and visit the surrounding area. The use of water-retentive pavement and micro-misters will redress the heat island effect.

At the same time, at the Mitsubishi Ichigokan, Mitsubishi Estate recreated Marunouchi's historical landscape by faithfully restoring Marunouchi's first office building, completed in 1894, by using the technical design specifications from that period, as well as technical drawings and preserved materials from its demolition. The building will open as a full-fledged museum in April 2010.

## A true member of the community

**Takashi Mimura**
Facility Planning Office, Corporate Administration Dept., Mitsubishi Corporation

Mitsubishi Corporation moved into the Marunouchi Park Building in May 2009. This redevelopment project highlights Mitsubishi Estate's dedication to a city planning model that takes the good from the old and the new and brings it into the future. Mitsubishi Ichigokan's restoration, together with the Ichigokan Plaza, have won enthusiastic praise from employees and both Japanese and overseas customers. I am also very impressed with the eco-friendly, cutting-edge features. As part of its $CO_2$ Action Project launched in fiscal 2009, Mitsubishi Corporation is reducing the $CO_2$ generated by its offices. As the owner of this building, Mitsubishi Estate's cooperation is essential in efforts to lower environmental impact, such as reducing electricity use and waste, and we look forward to our continuing collaboration.

Ichigokan Plaza
Greenery and water amenities adorn approximately 1,500 m² of open space

## Marunouchi Park Building's environmental measures

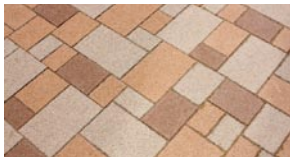
**Cool roof:** Materials preventing heat absorption are applied to roofs to lower the rise in internal temperatures caused by sunlight

**Solar power:** Solar panels with a maximum energy output of about 60kW are installed on rooftops

**Air-flow window systems:** Double-pane windows use two glass layers with an air space between where room air circulates to reduce heat from outside.

**Solar tracking system:** A solar tracking system installed on rooftops automatically controls window blinds in offices

**Ultra high-efficient lighting:** The shape and paint used for reflecting plates are adjusted to lower the power consumption of lighting



**Water-retentive pavement:** Water is stored up in water-retentive blocks when it rains and gradually evaporates to lower the surface temperature

**Micro-misters:** Water is sprayed in an ultra-fine mist and evaporates, cooling the air temperature in the surrounding area

**Re-use:** The clock used on the Marunouchi Yaesu Building before its demolition is re-used in the commercial zone

## Raising environmental performance of district overall

Marunouchi Heat Supply Co., Ltd., which supplies heat and cooling to the Otemachi, Marunouchi and Yurakucho district, has established a new plant on the fourth floor basement of the Marunouchi Park Building to coincide with its completion. The new plant serves as the main plant for the Marunouchi 2-chome district, supplanting the existing boiler plant (which was four floors underground in the Mitsubishi Building). The plant started supplying heat and cooling for the area at the end of April 2009.

This plant uses highly efficient heat source equipment, such as inverter cooling equipment, and also utilizes a flexible control system to accommodate varied load conditions. This enables effective energy use and $CO_2$ reductions.

In preparation for the future reconstruction of buildings in the district, the cold water supply system was designed so that it could be linked to new sub-plants which might be built in the future. The hot water supply system is linked to that of the adjacent Marunouchi 1-chome district to ensure efficient energy use by both areas and a stable supply of hot water.

Marunouchi Heat Supply strives to run the plants efficiently and use energy effectively. The company is moving ahead with plans to establish a new highly efficient plant and renovate existing plants to improve energy efficiency in the Otemachi, Marunouchi and Yurakucho district by 30% over 2007 levels by 2025 and reduce per-unit $CO_2$ emissions by 30%.


**Inverter turbo chiller:**
The world's most efficient machine for cooling water

## Environmental initiatives contribute to knowledge base

Mitsubishi Estate's environmental projects in the Otematchi, Marunouchi and Yurakucho district extend beyond infrastructure. The NPO Otematchi, Marunouchi and Yurakucho Area Management Association (Ligare), for which Mitsubishi Estate serves as the secretariat, and the Association for Creating Sustainability in Urban Development of the Otemachi, Marunouchi and Yurakucho District (Ecozzeria Association), which opened an office on the tenth floor of the Shin-Marunouchi Building in May 2007, spearhead environmental activities focusing on increasing the knowledge base.

Ligare operates the Marunouchi Shuttle, a free bus that circles through the Marunouchi and Otemachi areas, administers the Marunouchi Test, which tests the public on their knowledge about Marunouchi, and runs the Marunouchi Walking Guide, a walking tour that teaches participants about history and art in Marunouchi. Ligare expanded the scope of its activities with participation in the Tokiwabashi Forum, which carries out beautification and rejuvenation activities in Tokiwabashi Park in the vicinity. Ligare planted flowers in the park and had a nighttime cherry blossom festival using natural energy and LED lights.

The Ecozzeria Association plans and runs environment-related events to educate the public about the environment. These included the Morning EXPO, which proposed ways to more effectively use morning hours in urban settings, and the Water Sprinkling Project, in which participants sprinkled water to reduce the summer's heat island effect while measuring the temperature.

The Ecozzeria Association also held the public seminar “Global University Advance,” which addressed global environmental problems, and published the *OMY Community Social Responsibility Report*, an area-wide CSR report covering the entire Otemachi, Marunouchi and Yurakucho district, the first of its kind in Japan. Through these initiatives, the Association strives to publish information on the Otemachi, Marunouchi and Yurakucho district's environment and sustainable urban development.

The Eco Kids Expedition, which is jointly sponsored by the OMY Council, Ligare and the Ecozzeria Association, gives elementary school students—the hope of the next generation—a menu of environmental conservation activities carried out by companies in this district that the students can experience for themselves.

Ecozzeria also carries out studies and research on eco-friendly urban planning, including water use, energy management for the area, and low-carbon urban structures. In addition, Ecozzeria runs the Marunouchi Club for Global Sustainability, a network of environment and CSR managers and environmental technology managers, primarily working for companies in the district, who share information and hold study groups on issues such as environmental communication, health and urban food.

### Hand in hand with the community

**Mari Kuramoto**

**Secretariat, NPO Otematchi, Marunouchi and Yurakucho Area Management Association (Area Planning Office, Mitsubishi Estate)**

I am primarily in charge of the Marunouchi Shuttle Bus, the Marunouchi Test and the Marunouchi Walking Guide. This shuttle bus is Japan's first low-pollution bus running on a combination of electricity and micro-gas turbines, and the service is supported by the good will and sponsorship of the local companies. I sense that ecological awareness is truly growing in the community, as many individuals and companies volunteered to plant flowers in Tokiwabashi Park. I want to bring together the ideas and enthusiasm of individuals and companies and create an eco-friendly city that can become a model for other communities.