

CREATING A BRIGHTER FUTURE FOR ALL

A Green and Resilient Global City Tokyo Opens up a Future



Photo: Tako Bay, Kozushima Island



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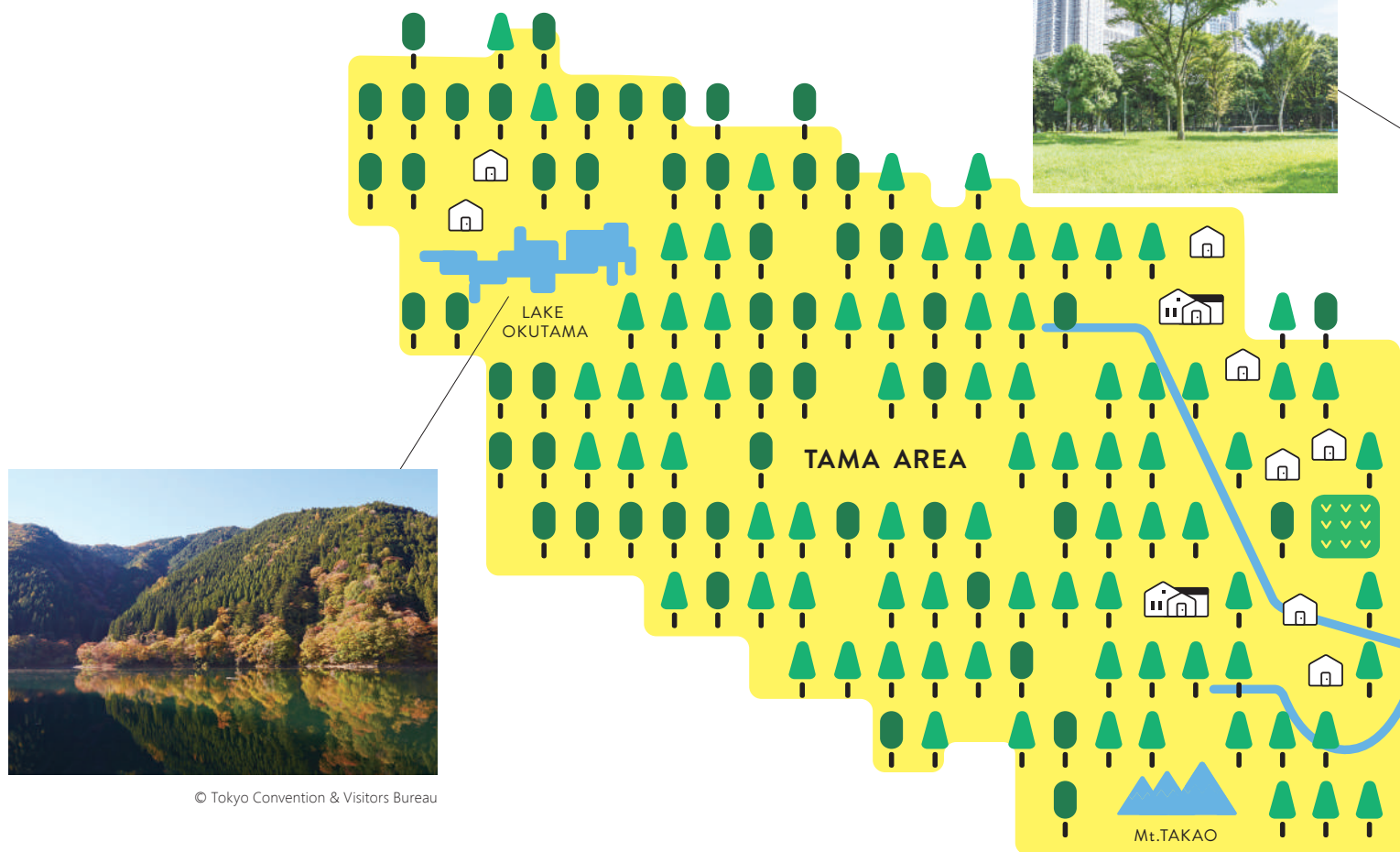
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Photo: Dolphins in the waters off Mikurajima Island

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TOKYO DATA



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PROFILE OF TOKYO



Area
(2023)

2,199 km²



Population
(January 2024)

14.11 million inhabitants



GDP
(2021)

113.7 trillion yen
(20.7% of national GDP)



Number of enterprises
(2021)

628 thousand



Number of foreign tourists
(2023)

19.54 million



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ENVIRONMENTAL INFORMATION



Greenery^{*1}
(2018)

52.5%



Final disposal amount of waste
(2022)

0.78 million tonnes



Greenhouse gas (GHG) emissions
(2022 preliminary)

59.45 million-CO₂ tonnes

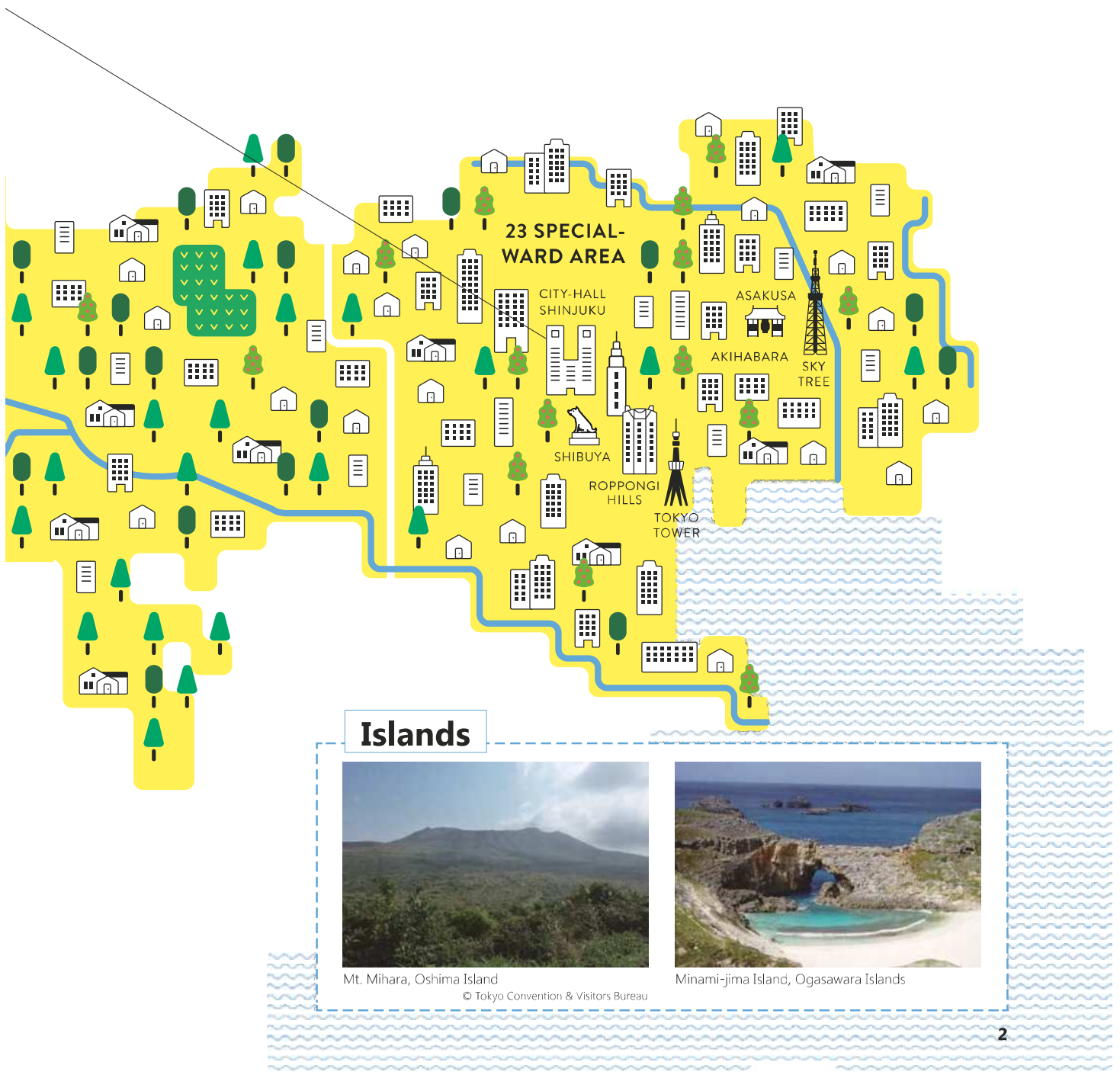


Concentration of PM_{2.5}
(particulate matter)^{*2}
(2023)

9.0 µg/m³

*1 Including water area

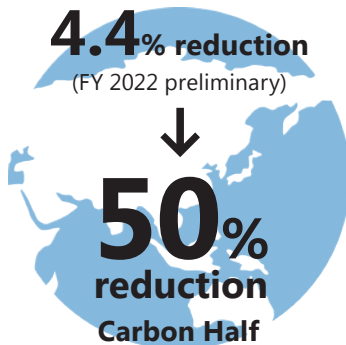
*2 Annual average of all monitoring stations



Tokyo Metropolitan Government (TMG) has determined policy targets for 2030 to aggressively develop cutting-edge environmental and energy initiatives.

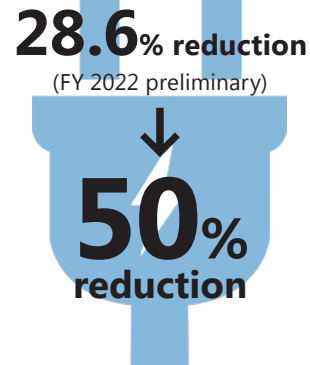
2030 GOALS

GHG emissions



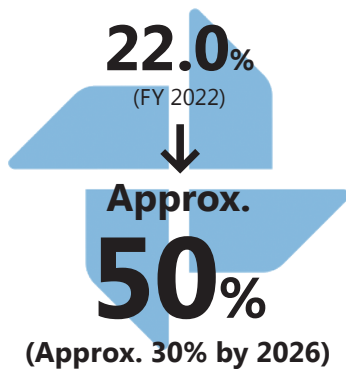
▶ GHG emissions compared to 2000 ◀

Energy



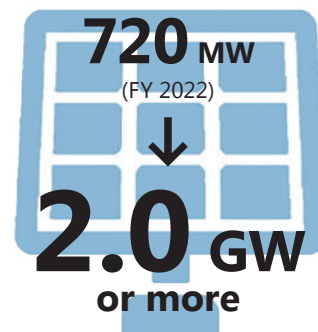
▶ Energy consumption compared to 2000 ◀

Renewable energy



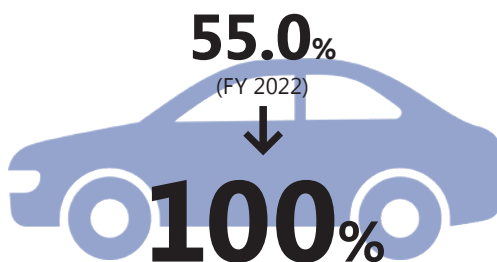
▶ Percentage of power generated by renewable energy ◀

Solar power generation



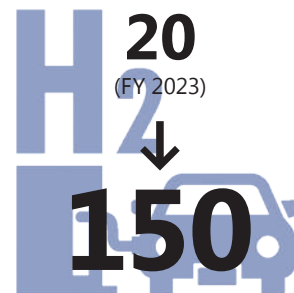
▶ Installation of solar power generation equipment in Tokyo ◀

Automobiles



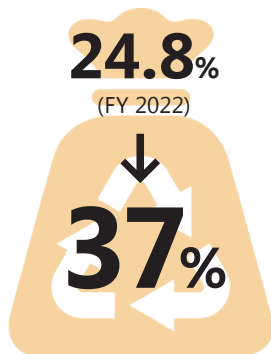
▶ Phasing out the sale of new gasoline-only passenger cars ◀

Hydrogen



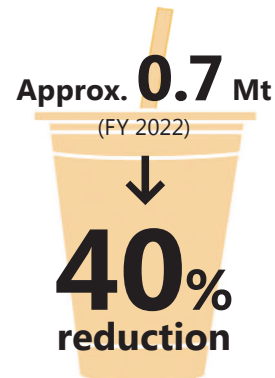
▶ Number of hydrogen stations ◀

Recycling



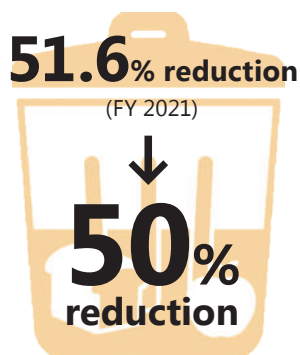
► Municipal solid waste recycling rate ◀

Plastics



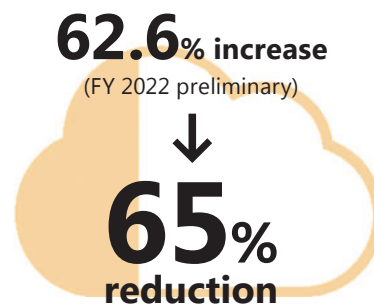
► Incineration of plastics from households and large office buildings compared to approx. 0.7 Mt in FY 2017 ◀

Food waste



► Food waste compared to FY 2000 ◀

Hydrofluorocarbons



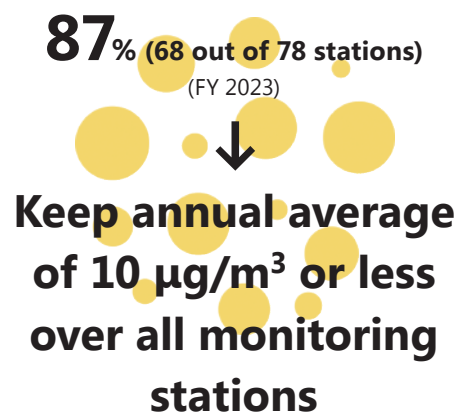
► Hydrofluorocarbons (HFCs) emissions compared to FY 2014 ◀

Biodiversity



► Status of biodiversity ◀

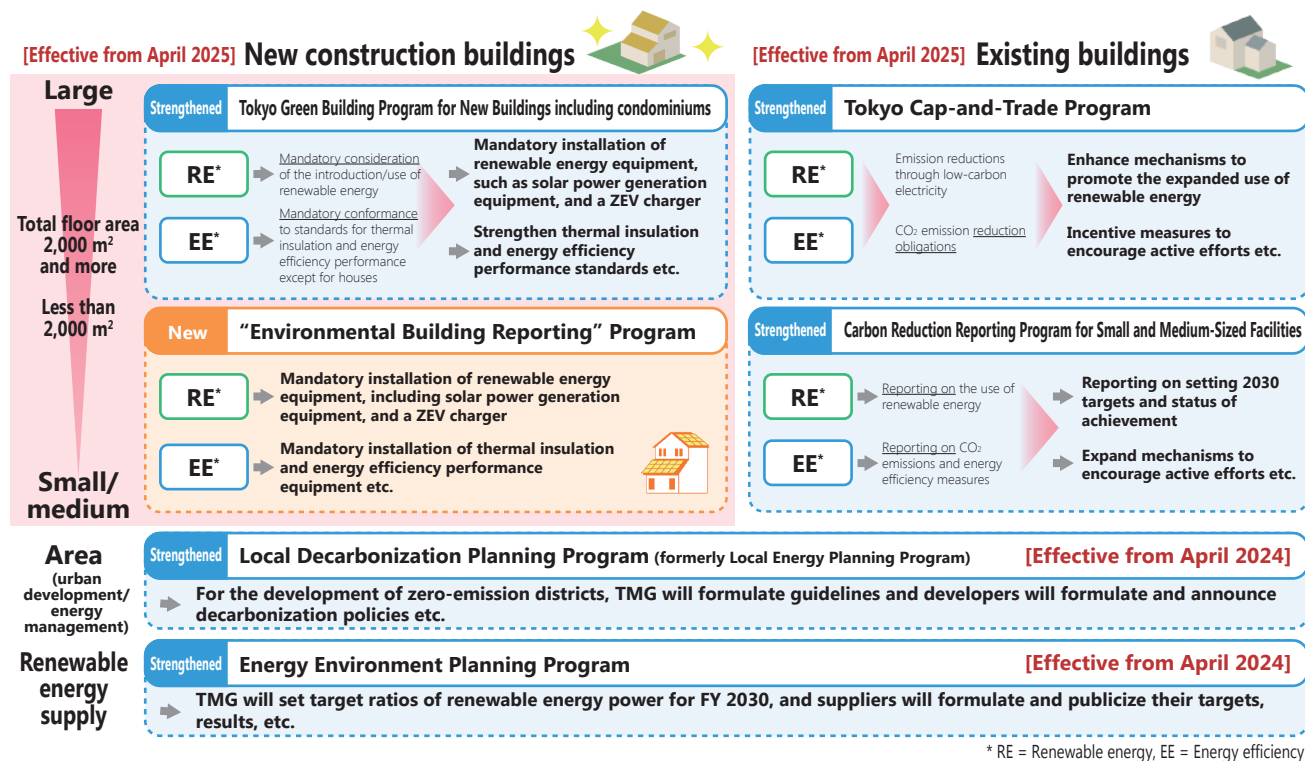
Air quality



► PM2.5 concentration ◀

Strengthening and Expanding Programs Based on Ordinances

In addition to strengthening and expanding the Tokyo Cap-and-Trade Program and other programs currently in place, TMG will establish a new program for small and medium-sized new buildings, which have so far eluded such institutional framework, in order to decisively promote the decarbonization of buildings in the commercial, industrial, and residential sectors.



Responding to the Climate and Energy Crises

Two crises, the climate crisis and the energy crisis, are facing us as evidenced by the further aggravation of extreme weather as well as the prolonged impact of the conflict between Ukraine and Russia from February 2022, posing the need for an integrated realization of decarbonization and energy security.

Accelerating the Social Implementation of Renewable Energy Collaboration with the Renewable Energy Implementation Expert Board

In June 2023, TMG launched **the Renewable Energy Implementation Expert Board**, a network of experts in the field of renewable energy, in order to decisively lead the social implementation of renewable energy.

We will work on the social implementation of advanced technologies as well as information dissemination for the expanded use of a variety of renewable energy and resources, such as solar power, wind power, and biomass.

In FY 2023, leading companies presented case examples and experts provided insights on maximizing the use of existing solar power generation technology. They also discussed how to collaborate with various entities to expand the use of renewable energy.



View of the FY 2024 Board

HTT (Ⓜ Herasu (Save), Ⓜ Tsukuru (Generate), and Ⓜ Tameru (Store) Electricity) Initiatives

Using HTT (Ⓜ Herasu (save), Ⓜ Tsukuru (generate), and Ⓜ Tameru (store) electricity) as a keyword, TMG is advocating efforts to realize a decarbonized society. We are also supporting the “deco katsu” initiative, which promotes both decarbonization and eco-friendly lifestyles, as spearheaded by the Ministry of the Environment.

We encourage Tokyo residents and businesses to take action to save power by holding events in collaboration with businesses, advertising in a variety of media, and taking advantage of SNS, posters, and PR items.

HTT 電力を
へらす
つくる
ためる
TokyoTokyo

デコ活
くらしの中のエコろがけ



Event held in collaboration with F.C. Tokyo



HTT posters

Promoting “Tokyo Green Biz”

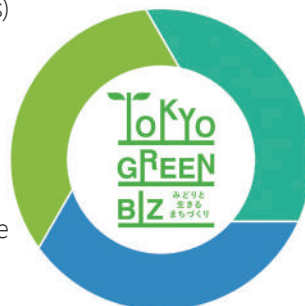
As the harmony between the natural environment and urban functions has become increasingly important, TMG launched a new green project, “Tokyo Green Biz,” in July 2023. Our goal is to transform Tokyo into a sustainable city that coexists with nature. We will achieve this by expanding initiatives to “protect,” “nurture,” and “utilize” Tokyo’s greenery, in collaboration with the citizens of Tokyo and other partners.

Green Urban Development
Tokyo GREEN BIZ



Efforts to Protect Greenery

- Protecting Greenery Rooted in the Community (e.g., Estate Woodlands)
- Preserving Areas with Rich Natural Environments
- Introducing a New Scheme to Protect Trees
- Conserving and Managing Forests that Protect Water Sources
- Promoting a Sustainable Forest Cycle



Efforts to Nurture Greenery

- Nurturing Greenery Together through the Tokyo Green Biz Movement
- Creating Greenery in Line with Urban Development

Efforts to Utilize Greenery

- Building Green Infrastructure that Leverages the Functions of Greenery and Nature
- Making Parks the Face of the City by Enhancing Their Appeal
- Leveraging Greenery as Local Landmarks
- Promoting the Appeal of Rich Natural Environments
- Harnessing the Diverse Values of Greenery

- Creating Lush Greenery and Open Spaces
- Forming Networks of Greenery and Water
- Developing Verdant Green Spaces as Symbols of Communities



Realization of a Zero Emission Tokyo

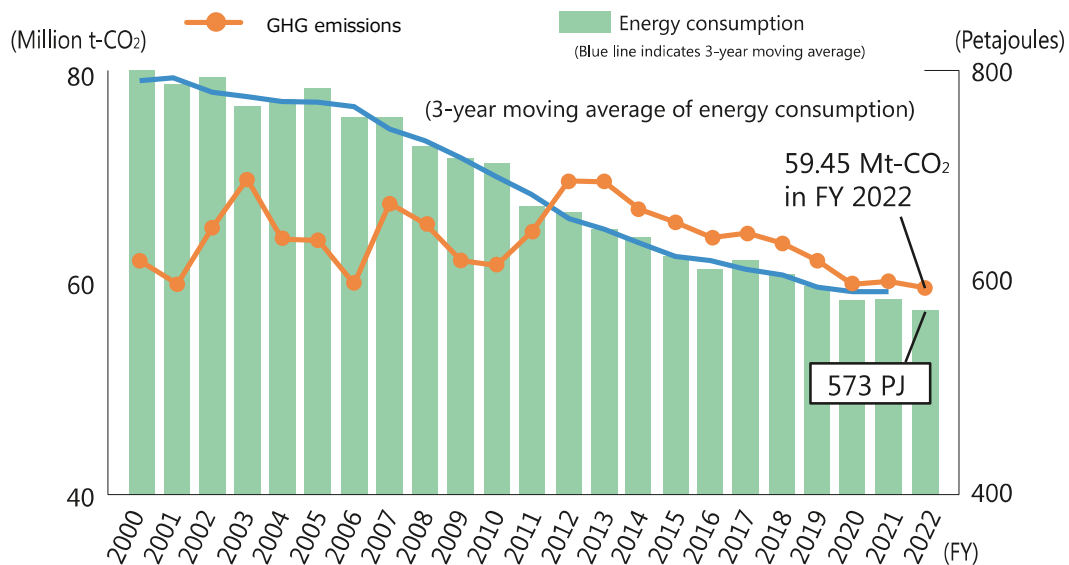
For the realization of a decarbonized society, it is essential to promote drastic transformations in various fields, including energy, urban infrastructure, and resource use.

TMG aims to realize a Zero Emission Tokyo in order to fulfill its responsibility as a major consumer of energy and resources and continue to be a city that achieves resilient and sustainable growth.

► Energy Consumption and Greenhouse Gas Emissions in Tokyo

Energy consumption in Tokyo passed its peak around FY 2000 and has been steadily decreasing since then.

Greenhouse gas emissions in Tokyo increased after the Great East Japan Earthquake in March 2011, but have been trending downward since FY 2012 because of reduced energy consumption and improvements in the CO₂ emission factors of electricity.



Changes in GHG emissions and energy consumption

► Sectoral Targets

To realize a 2030 Carbon Half, sectoral targets have been set for energy-related CO₂ emissions and energy consumption to promote reduction measures in each sector.

Energy-related CO₂ emissions

| | FY 2022 (preliminary results) | 2030 |
|--------------------------------------|-------------------------------------|--------------------------|
| Industrial/ commercial sectors | -6.8% | Approx. 50% reduction |
| Residential sector | +24.8% | Approx. 45% reduction |
| Transport sector | -50.7% | Approx. 65% reduction |

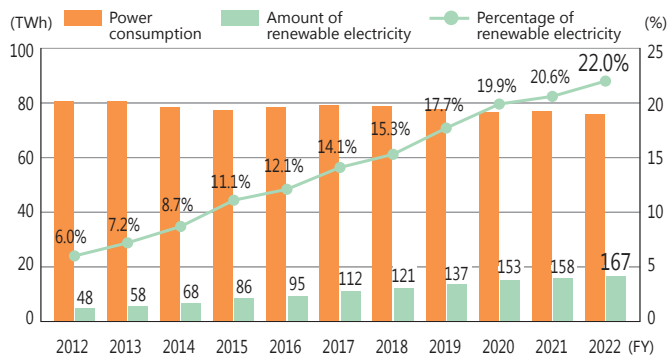
Energy consumption

| | FY 2022 (preliminary results) | 2030 |
|--------------------------------------|-------------------------------------|--------------------------|
| Industrial/ commercial sectors | -26.5% | Approx. 35% reduction |
| Residential sector | +4.0% | Approx. 30% reduction |
| Transport sector | -55.0% | Approx. 65% reduction |

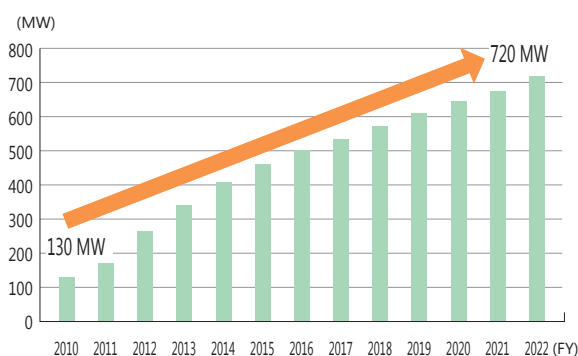
Making Renewable Energy a Major Energy Source

To realize a Zero Emission Tokyo, it is inevitable that we need to further promote energy efficiency and convert from fossil fuels to decarbonized energy, such as renewable energy.

Aiming to decarbonize all the energy used by 2050, TMG will develop efforts focusing on the local production and consumption and expanded use of renewable electricity until 2030.



Use of renewable electricity in Tokyo



Installation of solar power generation equipment in Tokyo

Local Production and Consumption of Renewable Energy Produced in Tokyo

Tokyo rooftop solar register (potential map)

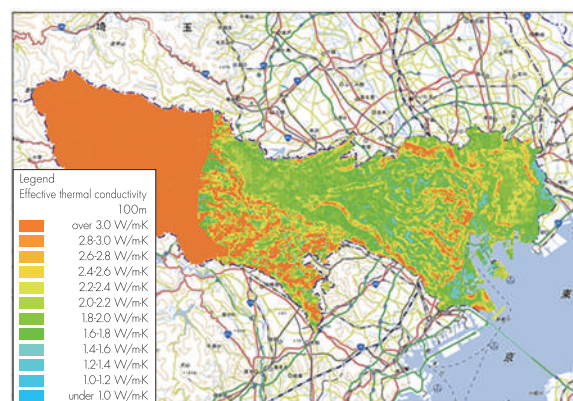
Online information is provided by the Tokyo Rooftop Solar Register, which clearly shows buildings' suitability for solar power generators and other equipment.



Ground source heat potential map

Ground source heat is a familiar renewable energy buried below us.

TMG provides online information on the potential for the adoption of geothermal heat and subsidizes the early stages of adoption.



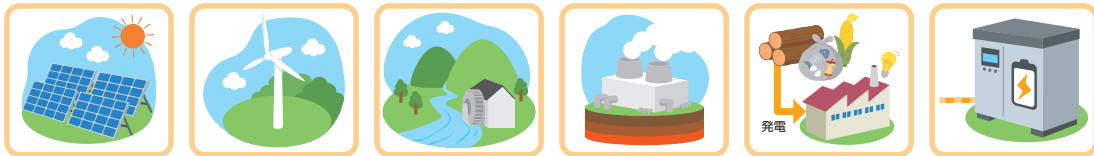
* Potentiality is color-coded with warmer colors indicating higher heat exchange efficiency.

▶ Drastically Increasing the Use of Renewable Power

Promoting local production and consumption of renewable energy at facilities

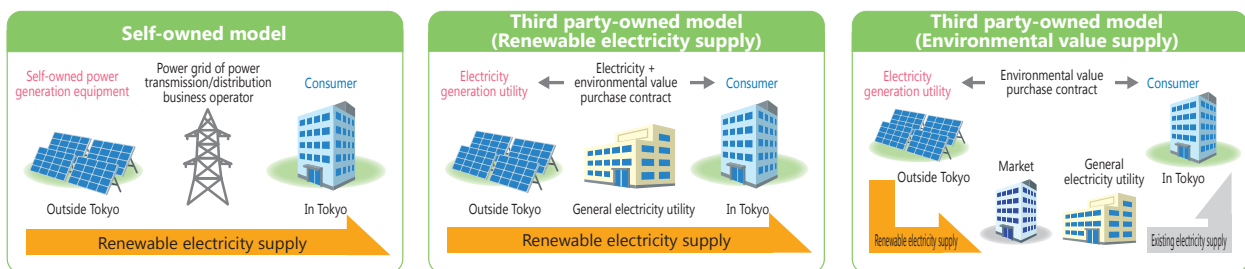
In order to expand the use of renewable energy in and outside Tokyo (within the service area of Tokyo Electric Power Company*), TMG has been subsidizing facilities of private businesses and municipalities that will install renewable energy power generation equipment, including solar and wind power generation, and heat utilization equipment, including ground source heat and solar heat, with the concept of local production and consumption.

* Other requirements will be applied.



Procuring renewable power sources etc. outside Tokyo

Due to regional characteristics that limited land makes large-scale renewable energy installations challenging within Tokyo, TMG subsidizes businesses in Tokyo working on the use of renewable electricity for the installation of renewable energy power generation equipment and storage batteries outside of Tokyo.



Column

Tokyo Bay eSG Project (priority projects)

As part of the Tokyo Bay eSG Project, priority projects have been launched to realize a sustainable city that harmonizes nature with urban convenience. In the Central Breakwater area, TMG supports developers in verification projects aimed at the social implementation of cutting-edge renewable energy technologies, such as offshore floating solar power generation.



Solar pavement



Floating solar power generation systems

Promoting the social implementation of next-generation solar cells

Next-generation solar cells*, a new technology developed in Japan, are thin, light, and flexible, and can be installed on building exteriors, making them essential for the further expansion of renewable energy. To accelerate their social implementation, TMG supports verification projects by developers.

* Solar cells that use a crystal structure called perovskite

Verification examples



Installation on the covering

Sewage facility
(Morigasaki Water Reclamation Center)



Installation on the 4th floor deck

Port facility
(Tokyo International Cruise Terminal)



TMG Building Observatory

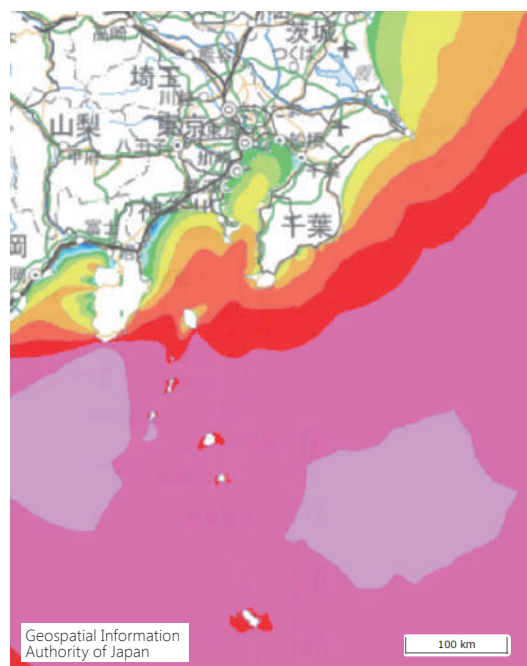
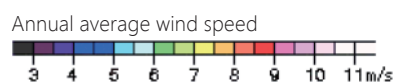


Column

Potential of offshore wind power

The national government views offshore wind power as crucial for making renewable energy the primary power source.

At the second meeting of the Tokyo Renewable Energy Implementation Expert Board held in FY 2023, experts stated that the waters around the Izu Islands have wind speeds exceeding 9 meters per second, indicating significant potential for offshore wind power generation.



Source: NeoWins Offshore Wind Condition Map,
New Energy and Industrial Technology Development Organization (NEDO)

► Increasing renewable electricity supply

Efforts for electricity suppliers

To improve the environmental properties of electricity supplied to Tokyo, TMG requires general electricity utilities for Tokyo to set targets for renewable energy volume and report the results through the Environmental Energy Reporting Program.

Outline of the Environmental Energy Reporting Program

Targets

- ✓ General electricity utilities and power transmission and distribution business operators who supply electricity to Tokyo

Objectives

Improvement of the quality of energy supplied to Tokyo

- ✓ Reduction of CO₂ emissions
- ✓ Promotion of the introduction of renewable energy etc.

Environmental Energy Reporting Program Formulation, submission, and publication every year

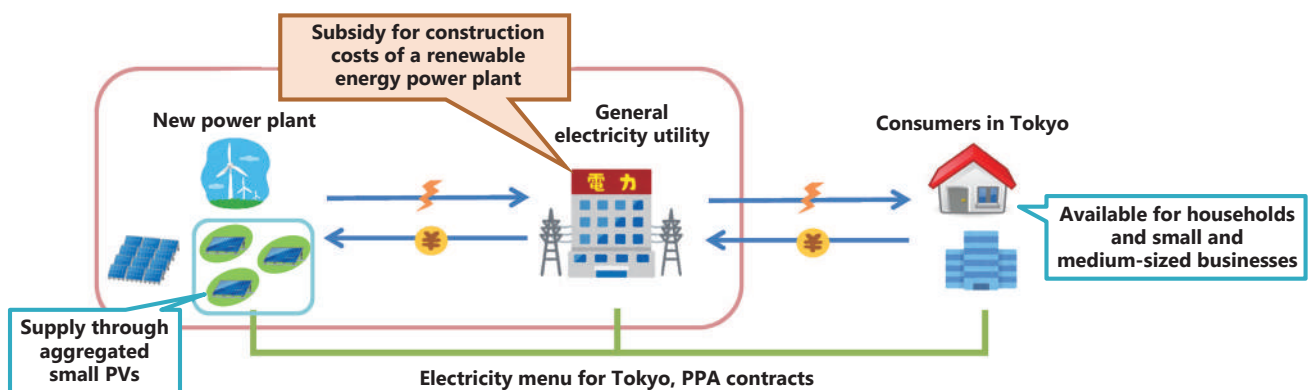
- ✓ Goals and reporting of CO₂ emission factors
- ✓ Goals and achievements of the use of renewable energy etc.

Key points

- ✓ Set the FY 2030 target ratio of renewable electricity at approximately 50% and publish it
- ✓ **Develop an environment with a wide variety of renewable electricity options to choose from**
- ✓ **Enhance information dissemination by TMG and create an easy-to-use information database for consumers**

Supporting general electricity utilities in developing new renewable energy equipment

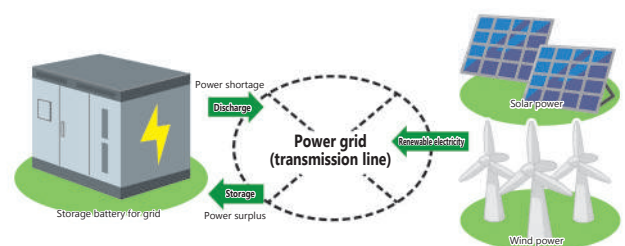
To achieve a renewable electricity ratio of approximately 50% by FY 2030, it is essential to increase the supply of renewable electricity by general electricity utilities. TMG is promoting the supply of renewable electricity to Tokyo by helping general electricity utilities develop renewable power sources that currently lack designated supply destinations.



Promoting efforts to ensure stable energy supply

Renewable electricity needs stable grid power as the amount of power generated fluctuates greatly depending on the weather, time of day, etc.

For businesses that balance the supply and demand of electricity, TMG subsidizes the introduction of large storage batteries directly connected to the power grid within the service area of Tokyo Electric Power Company.

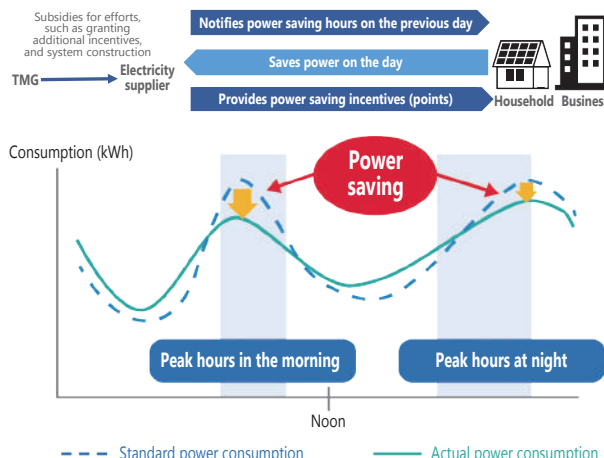


▶ Advanced Energy Management Using AI and IoT

Adjusting the amount of electricity for stabilized power

To stabilize electricity supply and demand, adjustments on the demand side are also important.

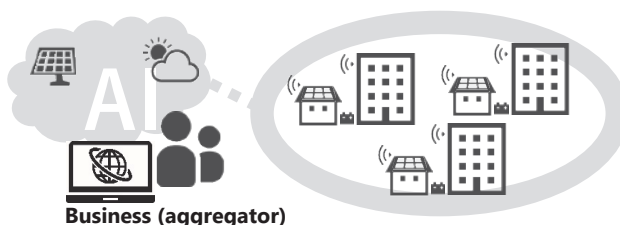
TMG supports electricity suppliers in providing incentives, including points, to households and facilities that work to save power according to their requests for power saving depending on the status of electricity supply and demand.



Optimizing electricity demand

The efficient use of renewable energy requires the effective optimization of electricity demand through AI and IoT in addition to timely power saving.

TMG will promote aggregation businesses that bundle distributed energy resources, such as storage batteries owned by households and businesses, and control them according to demand.



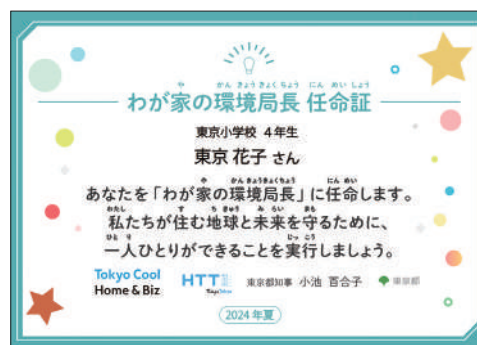
Column

You Are Environment Ambassador at Home from Today!

For the realization of a 2050 Zero Emission and 2030 Carbon Half, it is important to raise awareness among children and educate them as they will play a major role in any future society, and will encourage behavior change and raise awareness among adults as well.

Since FY 2022, TMG has been conducting the Environment Ambassador at Home project in which children act as environmental leaders, saving electricity and enjoying other benefits with their family members.

Many children learn about environmental measures and take action with their families through environmental events and content where they figure out and take environmental actions by themselves. As a summary event of the year, TMG holds the Environment Ambassador at Home Summit where children present their activities to the governor of Tokyo.



Certificate of Appointment for the Environment Ambassador at Home in summer 2024

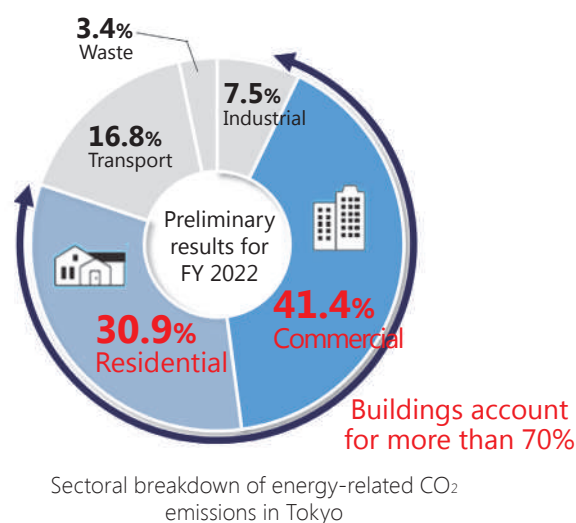


Environment Ambassador at Home Summit Spring 2024

Expanding Zero Emission Buildings

Tokyo is home to densely built office buildings, residences, and other structures, and is characterized by the fact that a large part of the city's CO₂ emissions come from the commercial and residential sectors.

TMG will accelerate the realization of zero emission buildings by making energy use at buildings as efficient as possible and decarbonizing the energy used at buildings.



► Strengthening Programs to Accelerate Zero Emission Buildings

TMG has developed effective programs according to building type (new or existing) and size (large or small/medium).

Existing programs to be strengthened toward “Carbon Half”

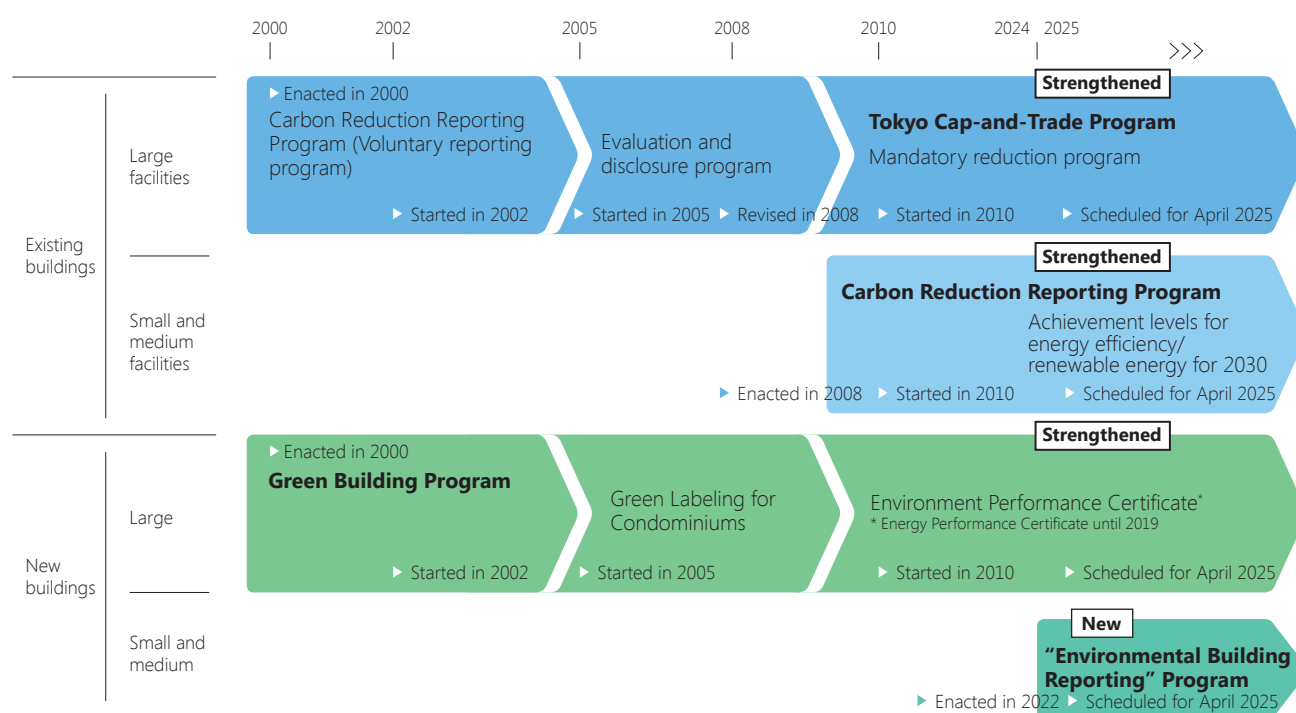
Tokyo Cap-and-Trade Program for large facilities

Carbon Reduction Reporting Program for small and medium-sized facilities

Green Building Program for New Buildings for buildings of a certain size, which are newly built, expanded, or renovated

New program to be introduced in April 2025

Environmental Building Reporting Program which requires certain small and medium-sized new buildings to install renewable energy equipment, including solar power generation equipment



► The World's First Urban Cap-and-Trade Scheme for Large Facilities

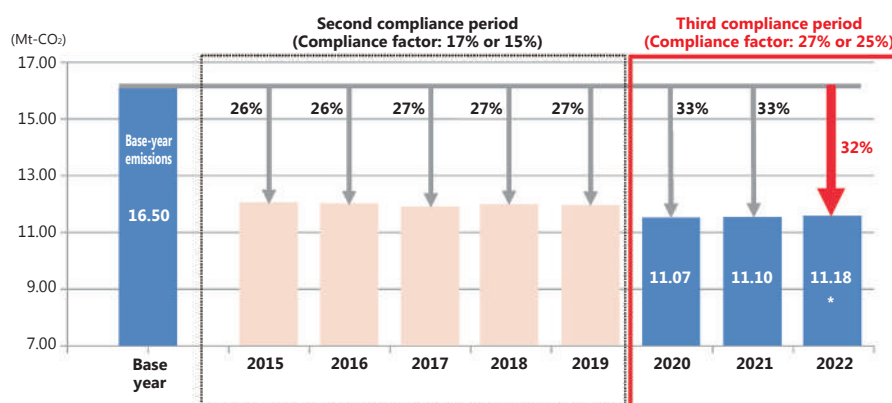
In April 2010, TMG started the Tokyo Cap-and-Trade Program targeting large facilities.

The total emissions from facilities covered by this program account for approximately 40% of the emissions from the industrial and commercial sectors in Tokyo. Covered facilities must reduce a specified amount by implementing emission reduction measures on their own or conducting emissions trading.

In the fourth compliance period starting from FY 2025, the compliance factors will be raised to 50% for office buildings etc. and 48% for factories etc.

TMG will further promote the expanded use of renewable energy by enhancing options to meet reduction obligations, such as introducing renewable energy from outside facilities.

| | |
|--|---|
| Covered facilities | Approximately 1,200 facilities which annually use at least 1,500 kL of energy in terms of crude oil equivalent |
| Applicable gases | CO ₂ emitted from the use of fuel etc. |
| Compliance periods (5 years for each) | 1st compliance period: FY 2010 - 2014 2nd compliance period: FY 2015 - 2019 3rd compliance period: FY 2020 - 2024 4th compliance period: FY 2025 - 2029 |
| Compliance factors | 1st compliance period: 8% for office buildings etc. and 6% for factories etc. 2nd compliance period: 17% for office buildings etc. and 15% for factories etc. 3rd compliance period: 27% for office buildings etc. and 25% for factories etc. 4th compliance period: 50% for office buildings etc. and 48% for factories etc. |
| Emissions trading | Excess emission reductions and four types of offset credits can be traded |
| Penalties | Order for Action (reduction of 1.3 times the shortage), monetary fines (up to 500,000 yen), and/or disclosure of violations |



* Values as of February 9, 2024

(Emission factors for electricity etc. have been fixed at 0.489 t-CO₂/MWh in the second and third compliance periods)

Emission reductions during the second and third compliance periods

► Carbon Reduction Reporting Program for Small and Medium-Sized Facilities

TMG introduced the Carbon Reduction Reporting Program for Small and Medium-Sized Facilities in April 2010 to understand the amount of CO₂ emissions from small and medium-sized facilities and promote energy efficiency measures at these facilities. Since FY 2020, we have been motivating businesses to work harder by introducing a mechanism to evaluate and publish businesses with significant CO₂ emission reductions or excellent efforts for using renewable energy.

Outline of the Carbon Reduction Reporting Program for Small and Medium-Sized Facilities

Targets

- ✓ Businesses that have facilities with annual energy consumption of less than 1,500 kL in terms of crude oil equivalent

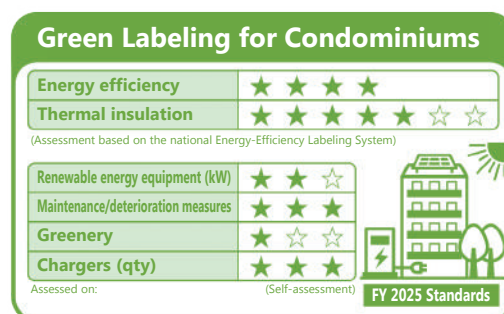
Key points of strengthening the program from April 2025 onwards

- ✓ TMG publishes achievement levels for FY 2030 and businesses report on target setting and achievement status
- ✓ Expand items to be reported and published regarding the use of renewable energy
- ✓ Visually depict efforts made by facilities from three perspectives: energy efficiency, renewable energy use, and CO₂ reduction

► Green Building Program for New Buildings

Based on its ordinances, TMG has been implementing the program to require owners who build large buildings to submit a Building Environmental Plan. An outline of the plan is then made public by TMG.

Since FY 2020, TMG has expanded the program coverage from buildings with a total floor area of more than 5,000 m² to include those of at least 2,000 m² and introduced ZEB (Net Zero Energy Building) Evaluation as the highest rank in the energy efficiency assessment.



Green Labeling for Condominiums
Condominium owners are required to display the environmental performance label on their sales and rental advertisements.

Outline of the Green Building Program for New Buildings

Targets

- ✓ Building owners who construct buildings, including new constructions, renovations, or extensions, with a total floor area of at least 2,000 m²

Key points of strengthening the program from April 2025 onwards

Thermal insulation and energy efficiency performance standards

- ✓ **Raise existing** thermal insulation and energy efficiency performance **standards (except those for houses) to above the national standards**
- ✓ **Establish new standards for houses**

Renewable energy installation standards (solar power generation equipment)

- ✓ **Require the installation of renewable energy equipment**, such as solar power generation equipment
 - **Installation standard capacity (kW) = Total floor area of building (m²) x Installation standard rate 5% x 0.15 (kW/m²)**
 - **Determine lower and upper limits** for the renewable energy installation standards
- ✓ **Require on-site installation in principle, but allow off-site installation or the procurement of renewable electricity under certain conditions**

ZEV charging equipment standards

- ✓ **Require new buildings** with a certain minimum number of parking spaces **to install chargers, piping, etc.**

Others

- ✓ Strengthen and expand criteria to evaluate the efforts of building owners who take on high-level challenges
- ✓ Add evaluation items related to consideration for reducing environmental load associated with construction
- ✓ Strengthen and expand the display of environmental performance and the content of explanations given to building users by building owners as well as enhancing the information published by TMG to encourage the selection of environmentally friendly buildings

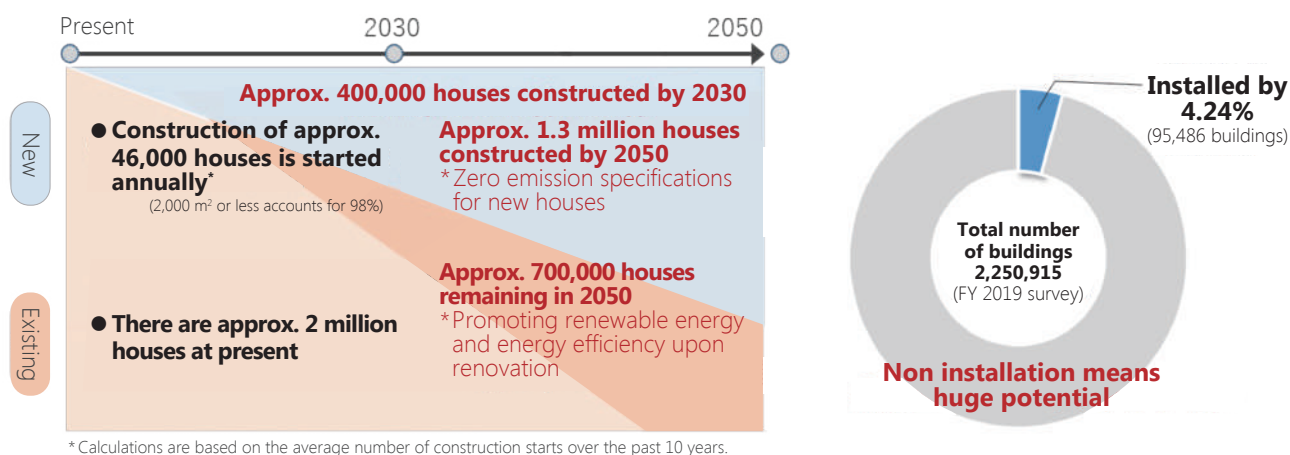
► Establishment of the Environmental Building Reporting Program

The status of houses in Tokyo and the background of the establishment of the program

Roughly 70% of all CO₂ emissions in Tokyo are caused by the use of energy at buildings.

It is extremely important to take measures for new buildings as they will shape the Tokyo of 2050. It is expected that about half of all existing buildings (70% of which are houses) will be replaced by new buildings by that year.

TMG will make the most of the huge potential of the metropolis of Tokyo's rooftops as the installation of solar power generation equipment on residential roofs in the city has been limited until now.



Outline of the Environmental Building Reporting Program

The program will mandate or encourage major house builders and other businesses to ensure thermal insulation and energy efficiency performance and install solar power generation equipment at small and medium-sized new buildings, including houses.

Through this program, businesses will develop products and services that will fully bring out the benefits of solar power generation, and houses providing high environmental performance with solar power generation equipment will be standardized, increasing options available to Tokyo residents.



Tokyo Solar Portal

Key points of the new program from April 2025 onwards

Who is required to install solar panels?

- ✓ **The program will cover house builders and other businesses that supply a total floor area of 20,000 m² or more annually in Tokyo.**
- ✓ **The program coverage includes new buildings**, not existing ones.
- ✓ In this program, **suppliers responsible for installation will work together with owners of custom-built houses and purchasers of built-for-sale houses** to improve the environmental performance of buildings.

* Businesses that have made application and been approved by the governor will also be able to participate in the program.

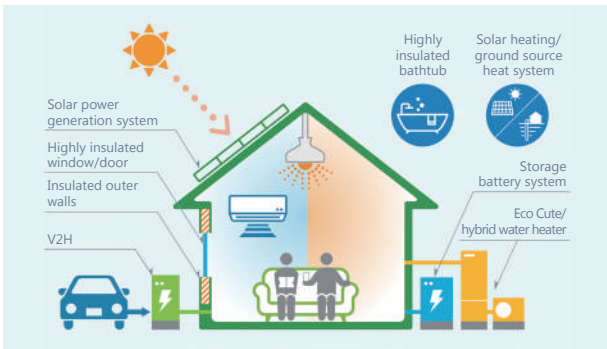


▶ Initiatives to Encourage the Expansion of Zero-Emission Buildings

Improving energy efficiency performance and promoting the introduction of renewable energy at houses in Tokyo

TMG will encourage improvements in thermal insulation and the installation of solar power generation equipment at houses in Tokyo to promote the spread of thermally insulated solar homes that are resistant to disasters and contribute to the health of residents.

- ✓ From FY 2024, subsidize the installation of highly insulated bathtubs and the addition of IoT devices to existing storage batteries and increase subsidies for the installation of storage batteries on the condition of participation in demand response



Supporting the supply and development of houses compliant with the new program

Before the start of the Environmental Building Reporting Program, TMG provides support to businesses preparing for its implementation and actively encourages those taking proactive steps before the program comes into effect.

- ✓ Encourage the expansion of housing models with high environmental performance by house builders, and support efforts of local contractors to improve design and construction techniques
- ✓ Provide comprehensive subsidies for solar power generation equipment, and support planned efforts by businesses
- ✓ Acknowledge and celebrate businesses that actively promote the proliferation of high-environmental-performance buildings



Tokyo Eco Builders Award 2023

Promotion of Tokyo Zero Emission Houses

To ensure the expansion of houses with high environmental performance which take into account the regional characteristics of Tokyo, TMG subsidizes newly built Tokyo Zero Emission Houses that meet its standards according to their performance levels. Starting in October 2024, we will raise the standards for thermal insulation and energy efficiency performance and mandate the installation of solar power generation equipment and other renewable energy equipment to further promote the spread of houses with high environmental performance.

| Existing standards (until September 30, 2024) | | | New standards (from October 1, 2024) | | |
|---|---|--|---|---|--|
| | Average heat transmission coefficient of shell in W/m ² ·K | Reduction rate from energy efficiency standards excluding renewable energy <small>* Percentages in parentheses apply to non-wooden apartment buildings etc.</small> | | Average heat transmission coefficient of shell in W/m ² ·K | Reduction rate from energy efficiency standards excluding renewable energy <small>* Percentages in parentheses apply to non-wooden apartment buildings etc.</small> |
| Level 3 | 0.46 or less | 40% (35%) or more | New | Level A | 0.35 or less / 45% or more |
| Level 2 | 0.60 or less | 35% (30%) or more | Moved | Level B | 0.46 or less / 40% or more |
| Level 1 | 0.70 or less | 30% (25%) or more | Integrated | Level C | 0.60 or less / 30% or more |
| | | | + Installation of renewable energy equipment (solar power generation equipment etc.) in principle | | |

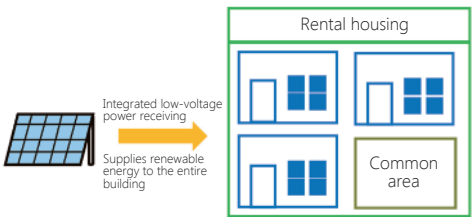


Average heat transmission coefficient of shell: An index of thermal insulation performance. The smaller the number, the better the insulation performance.

Reduction rate from energy efficiency standards: An index of the energy efficiency performance of equipment. The higher the number, the better the energy efficiency.

Promoting energy efficiency and renewable energy in rental housing

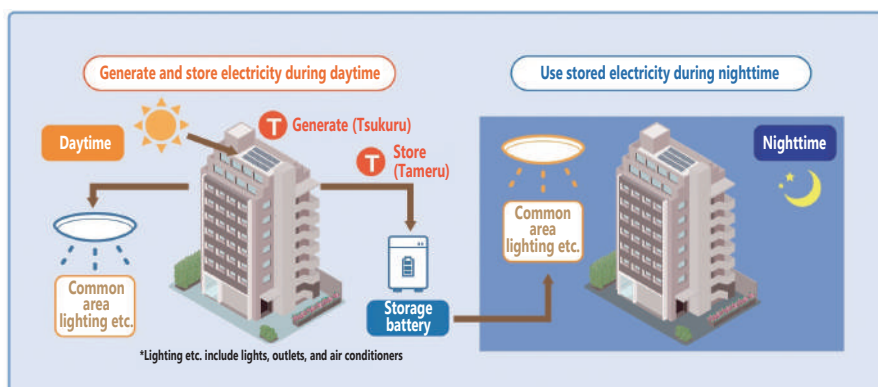
TMG provides subsidies to rental property owners to cover costs for thermal insulation retrofits, energy efficiency performance assessments and displays, and the introduction of integrated low-voltage power receiving in conjunction with solar power generation.



Example of integrated low-voltage power receiving scheme

Promoting the introduction of renewable electricity to apartment buildings

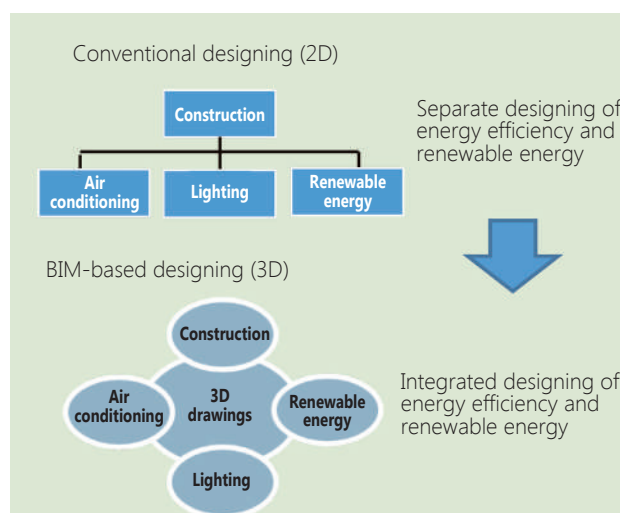
For the expanded use of renewable energy, it is necessary to promote its introduction in apartment buildings, which account for 70% of all housing in Tokyo, but there are challenges specific to such structures, such as limited space for installation or a need for waterproofing work or the installation of integrated power receiving equipment. To lower these hurdles, TMG provides comprehensive support, from building consensus among residents to the introduction and operation of equipment. We also help in the introduction of 100% renewable electricity through integrated high-voltage power receiving, promoting the switch to renewable electricity.



Expanding support and incentives to ensure building energy efficiency

TMG holds seminars and other events to promote energy efficient designs for new buildings using 3D design models.

From the perspective of integrated design, we conduct research and exploration into the renovation of existing facilities. This includes thermal insulation, equipment optimization, and the introduction of energy efficiency measures and renewable energy through cutting-edge technology.



Promoting zero emission action at home through zero emission points

TMG provides Tokyo Zero Emission Points, which can be exchanged for gift certificates and LED discount coupons, to Tokyo residents who have replaced their home appliances, such as air conditioners, refrigerators, water heaters, and LED lighting fixtures, with high energy efficiency models.



Expanding support and reviewing application methods from October 2024

(1) In-store discounts

- ✓ Simplify the application procedure for Tokyo residents through **direct discount from sales prices**

(2) Support for replacing appliances used for extended periods

- ✓ **Increase subsidies** to encourage replacement of such appliances

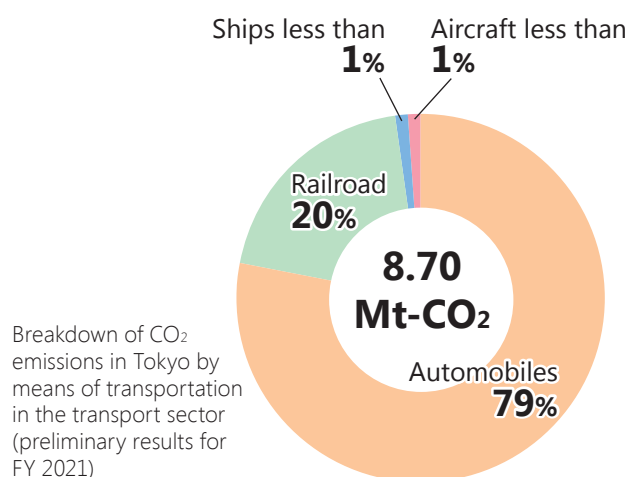
(3) Support for purchasing new high efficiency appliances

- ✓ Encourage the purchase of high efficiency air conditioners and refrigerators

Promoting Zero Emission Mobility

TMG aims to eliminate the sale of new gasoline passenger cars by 2030 and new gasoline motorcycles by 2035 in Tokyo, accelerating the introduction of zero emission vehicles (ZEVs) and the development of infrastructure.

We also cooperate on events to raise awareness of ZEVs.



Formula E

► Broader Use of ZEVs

TMG subsidizes the purchase of ZEVs to promote their broader use. We have increased subsidies for vehicles from automobile manufacturers that have a certain level of sales of ZEVs and others as an incentive for vehicle model development and sales promotion. From FY 2024, subsidies will be increased for chargers/dischargers for ZEVs (V2B and V2H*) or public chargers installed by businesses.

| EVs | |
|--|-------------------|
| Purchase of an applicable vehicle will get you | Up to 450,000 yen |
| A vehicle from applicable automobile manufacturers will add | Up to 100,000 yen |
| Installing a charger/discharger (V2B/V2H) or public charger will add | Up to 100,000 yen |
| Signing up for a 100% renewable electricity plan will add | Up to 150,000 yen |
| Or | |
| Installing a solar power generation system will add | Up to 300,000 yen |

| PHEVs | |
|---|-------------------|
| Purchase of an applicable vehicle will get you | Up to 450,000 yen |
| A vehicle from applicable automobile manufacturers will add | Up to 100,000 yen |
| Installing a charger/discharger (V2B/V2H) or public charger will add | Up to 100,000 yen |
| Signing up for a 100% renewable electricity plan or installing a solar power generation system will add | Up to 150,000 yen |

| EV motorcycles | |
|--|-------------------|
| Purchase of an applicable vehicle will get you | Up to 480,000 yen |

| FCVs | |
|---|-----------------------|
| Purchase of an applicable vehicle will get you | Up to 1.1 million yen |
| A vehicle from applicable automobile manufacturers will add | Up to 100,000 yen |
| Installing a charger/discharger (V2B/V2H) will add | Up to 100,000 yen |
| Signing up for a 100% renewable electricity plan or installing a solar power generation system will add | Up to 250,000 yen |

* Abbreviations for Vehicle to Building and Vehicle to Home. These pieces of equipment can supply electricity from storage batteries in ZEVs to buildings or homes, and are also available in emergencies.

Efficient use of automobiles

Under the Tokyo Vehicle Emission Reduction Program, TMG has mandated that businesses using 30 or more automobiles must submit a plan and results report on reduction targets for exhaust gases and efforts for the rationalized use of automobiles.

Under the Freight Transportation Evaluation System, TMG evaluates truck transportation businesses that promote eco-driving and other initiatives based on actual fuel efficiency to encourage their efforts to reduce CO₂ emissions.

► Development of Infrastructure to Support the Expansion of ZEVs

Improving the availability of EV chargers

In order to eliminate users' anxiety about insufficient charging opportunities, TMG is promoting the installation of EV chargers as social infrastructure.

We will revise the Tokyo Metropolitan Environmental Security Ordinance to require new buildings with a certain minimum number of parking spaces to install chargers and other equipment from April 2025 onwards.

We are subsidizing installation costs at commercial facilities and other private facilities, and promoting verification in areas with parking meters.

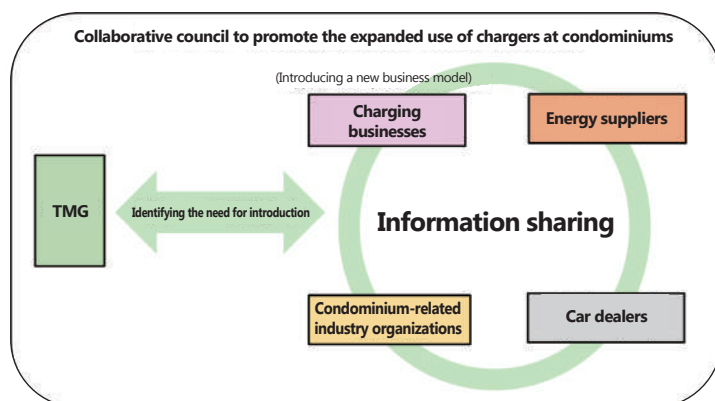


A charger installed along a public road in an area with parking meters

Promoting installation at apartment buildings

While allowing charging at home is important for the full-scale spread of ZEVs, installing chargers at apartment buildings is not as straightforward as it is at detached houses because a consensus needs to be formed among residents.

In addition to subsidizing the cost of installing chargers at condominiums, TMG is identifying the need for the introduction by sharing case examples, know-how, and challenges in collaboration with related organizations and businesses.



Wall-mounted outlet type



Stand type

► Promoting the Use of Bicycles

Since bicycles are a familiar and environmentally friendly means of transportation, we need to improve the safety, comfort, and convenience for bicycle users in conjunction with promoting the use of bicycles. Bicycle sharing is an effective mechanism for promoting the use of bicycles, and is now being developed in various parts of Tokyo. TMG supports the securing of sites for cycle ports and the initial investment made by municipalities, and collaborates with them to ensure the broader use of cycle ports.

Local governments with bicycle sharing as of September 1, 2024



Cycle port shared by multiple businesses

Note 1: "Local governments with bicycle sharing" refer to those that have concluded an agreement with a management company to operate a bicycle sharing service or install cycle ports on public land.
Note 2: Setagaya Ward also implements its own bicycle sharing.
Note 3: Management companies may install their own ports.

Expanding the Use of Hydrogen Energy

Hydrogen is a clean energy that emits only water when used, helping reduce environmental load as well as contributing to a diversified energy mix and response to emergencies.

Hydrogen is expected to be used in a wide range of fields, such as transportation, electricity generation, and heat utilization, and is also promising as a means to balance the supply and demand of renewable electricity. TMG is working to expand the use of hydrogen energy by providing support from various perspectives, such as institutional and financial aspects, and actively promoting the effective use of hydrogen-related technologies.

► Building the Foundation for the Use of Green Hydrogen

Most of the hydrogen currently produced is Gray Hydrogen from fossil fuels due to such factors as costs. We need to aim to expand both supply and demand of Green Hydrogen for which CO₂ is not emitted even during production.

TMG holds the Tokyo Green Hydrogen Roundtable to discuss related issues with companies making advanced efforts. We will increase cases of utilizing Green Hydrogen in Tokyo, including the establishment of a certification system for Green Hydrogen leadership businesses, its introduction at TMG facilities, and collaboration with other local governments.



Ceremony for starting the use of Green Hydrogen from Yamanashi

The use of Green Hydrogen produced in Yamanashi Prefecture started at Tokyo Big Sight

► Creating a supply chain through strengthened international collaboration

To further accelerate the implementation of hydrogen energy, TMG is working to launch a hydrogen exchange in collaboration with the H2Global Foundation, known as one of the world's leading hydrogen promotion organizations.

We will also promote alliances with cities overseas, helping create an international supply chain and develop related technologies.



Ceremony for signing a collaboration agreement with the H2Global Foundation

► Establishing a hydrogen supply system

To accommodate the future influx of Green Hydrogen, it is essential to establish a comprehensive supply system, including pipelines.

TMG aims to develop a hydrogen supply infrastructure in airports and waterfront areas and boost demand for hydrogen. To achieve this, we will set up a council to share information, promote discussions, and build consensus with various stakeholders. This initiative will significantly contribute to achieving carbon neutrality in the Tokyo metropolitan area and throughout Japan.



Image of the expanded use of hydrogen

▶ Promoting the Installation of Hydrogen Stations

Hydrogen stations started operation in Tokyo in 2014 and as of March 2024 have been installed in 20 locations. The key to making full use of hydrogen is to install hydrogen stations as these are a familiar energy supply infrastructure. TMG subsidizes businesses that install and operate hydrogen stations for the costs of installation and operation.



© Iwatani Corporation

Bus-capable hydrogen station

▶ Broader Use of Fuel Cell Vehicles

The use of hydrogen for commercial and industrial vehicles, which travel a long distance and require a lot of energy to power, is crucial for the decarbonization of the transport sector and expansion of hydrogen use.

In 2017, fuel cell buses were introduced into Tokyo metropolitan bus lines, becoming the first commercially available municipal fuel cell buses operated as route buses in Japan. As of the end of FY 2023, a total of 118 fuel cell buses have been introduced, including those operated by private businesses.

In April 2023, small fuel cell trucks were introduced in Tokyo. TMG provides support for these buses and trucks, including large vehicles.

For other commercial vehicles, such as fuel cell garbage trucks and ground support equipment powered by fuel cells, support measures will be taken according to the needs of vehicle types and their development status to promote their introduction.



Fuel cell bus



Large fuel cell truck

Column

Promotion of efforts in ports and the coastal area

Based on a public-private partnership, we have formulated the Port of Tokyo Carbon-Neutral Port (CNP) Building Plan to work on the decarbonization of the port by promoting the use of hydrogen for cargo handling and other equipment.

We will promote the spread of hydrogen energy among private businesses by creating a model for the utilization of hydrogen energy at buildings in the Tokyo Waterfront City.



Source: Website of Mitsui E&S Co., Ltd.

Electric/FC-driven cargo handling equipment



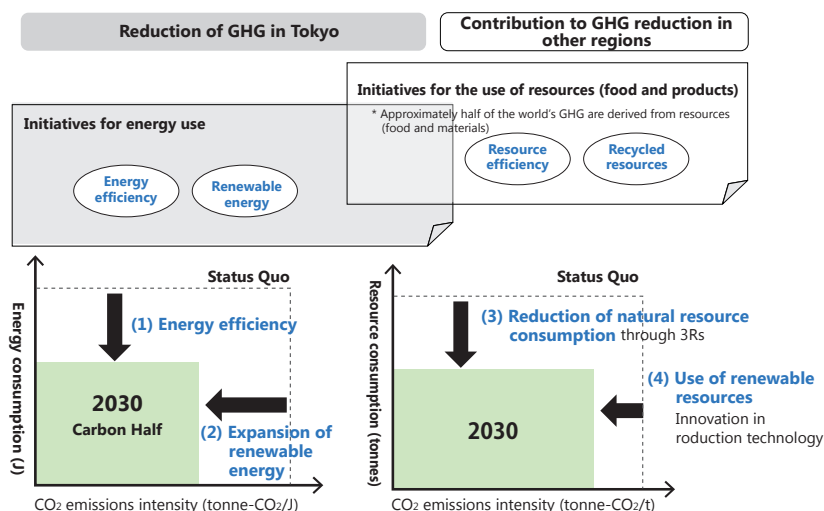
Source: Website of Terasaki Electric Co., Ltd.

Alternative maritime power supply to ships at anchor

Realizing the Sustainable Use of Resources

► Relationship between the Sustainable Resource Management and Climate Change Measures

As the existing linear economic model of extracting resources from the earth, making products, and throwing away unwanted items has a major impact on climate change, TMG has been actively working to promote sustainable resource management by positioning it as one of the array of climate change measures in the Zero Emission Tokyo Strategy formulated in 2019. In order to secure the global environment that is the basis for the existence of humans, we have to change the ways to make, sell, buy, and use things to realize the sustainable use of resources with net zero CO₂ emissions.

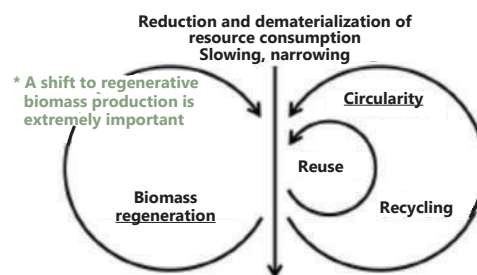


► Shift to a Circular Economy

To realize the sustainable use of resources and achieve net zero CO₂ emissions, we need to consider environmental load in the supply chain of products and food.

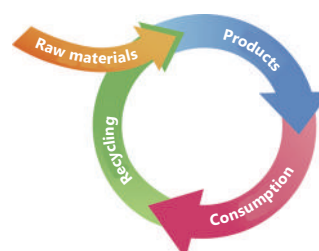
TMG will help shift to a circular economy by supporting new businesses that incorporate Reduce and Reuse, encouraging the commercialization of innovative recycling technologies, and promoting the improvement of recycling systems.

Concept of circular economy



Promoting efforts in collaboration with the Tokyo Circular Economy Promotion Center (T-CEC)

In collaboration with the Tokyo Circular Economy Promotion Center established in the Tokyo Environmental Public Service Corporation, TMG contributes to the realization of a circular economy by disseminating information on the sustainable use of resources and supporting specific efforts.

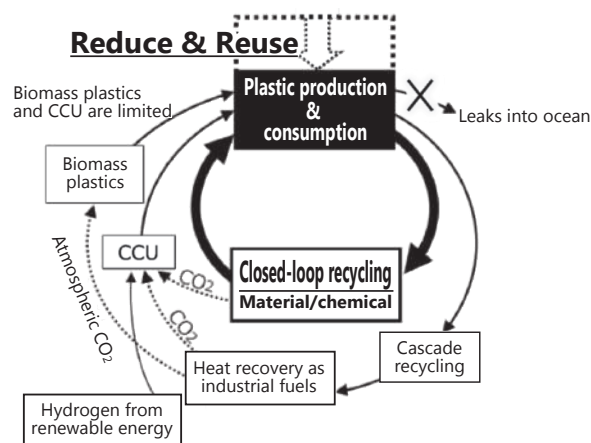


► Measures for Plastics

New ways of using plastics

While plastics have excellent properties, they affect climate change and biodiversity loss throughout all stages from production to disposal.

TMG will realize a “carbon closed cycle,” which represents the sustainable use of plastics with net zero CO₂ emissions, by mainstreaming 2R businesses, including selling by weight, sharing, and reusable containers, and implementing closed-loop recycling.



Concept of carbon closed cycle

Expanding innovation in collaboration with businesses

TMG is supporting and working with private companies committed to expanding game-changing reuse business models and closed-loop recycling technologies.



Examples of initiatives

Sharing services for reusable drink containers have been gradually implemented in society, mainly at restaurants and commercial complexes, in order to reduce Re&Go disposable containers and allow reusable containers to be easily used on the street.

Projects to support recycling of plastic containers and packaging

To help recycle containers and packaging, which account for a large part of plastic waste from households, TMG provides financial support for efforts by municipalities to promote the separate collection of plastics.

Column

Closed-loop recycling at the TMG Buildings

To take the initiative in closed-loop recycling, which can recover virgin-like material from used plastics, at the TMG Buildings, we carry out bottle-to-bottle loops that recycle used plastic bottles to brand new bottles and are also working on material recycling of plastic waste excluding plastic bottles.

In May 2024, TMG and Suntory Holdings Limited signed **an agreement on a comprehensive collaboration project to promote efforts for environmental integrity**.

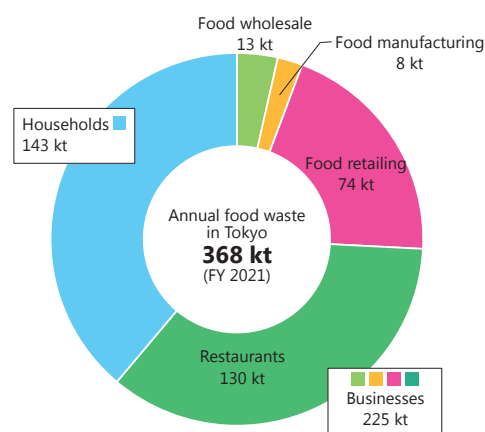
We will implement collaborative projects in a wide range of environmental fields, including sustainable resource management and the natural environment.



► Measures for Food Waste

Food waste in Japan is approximately 4.72 million tonnes (2022), which roughly corresponds to the amount of food aid provided by the United Nations in 2022, approximately 4.8 million tonnes.

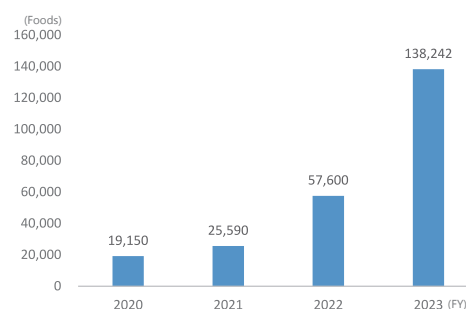
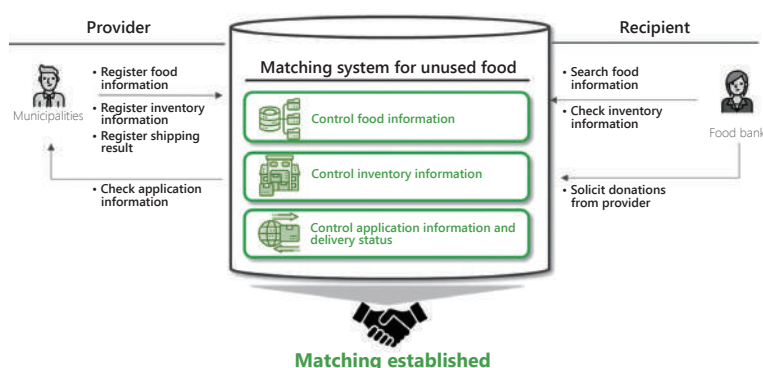
The quantity of edible but wasted food in Tokyo is approximately 370,000 tonnes per year (2021), and approximately 60% of that comes from hotels, restaurants, and other businesses. To halve wasted food by 2030 compared to 2000 levels, TMG formulated the Tokyo Food Loss and Waste Reduction Plan in March 2021.



* The total may not match the sum of the details due to rounding.

Establishing and expanding efforts for the effective use of unused food

TMG uses a matching system for unused food to donate emergency food stockpiled at municipalities and TMG to food banks and other organizations. While using the system more extensively, we will establish and expand a distribution model for mutual help by for example sharing information with municipalities and promoting the effective use of emergency food.



Number of matched emergency foods

Encouraging food waste reduction at small and medium-sized food retailers in Tokyo

For small and medium-sized food retailers in Tokyo, TMG will work with stakeholders to subsidize the costs of introducing measures for food waste for each value chain and widely disseminate information on the efforts of companies and the reduction of food waste.



Promoting food waste reduction in the restaurant industry in the post COVID-19 era

TMG will organize basic data in cooperation with startups to reduce food waste in the restaurant industry, which is expected to increase as demand recovers from the COVID-19 pandemic.



Promotion of 3Rs

Promoting the advanced circular use of solar panels

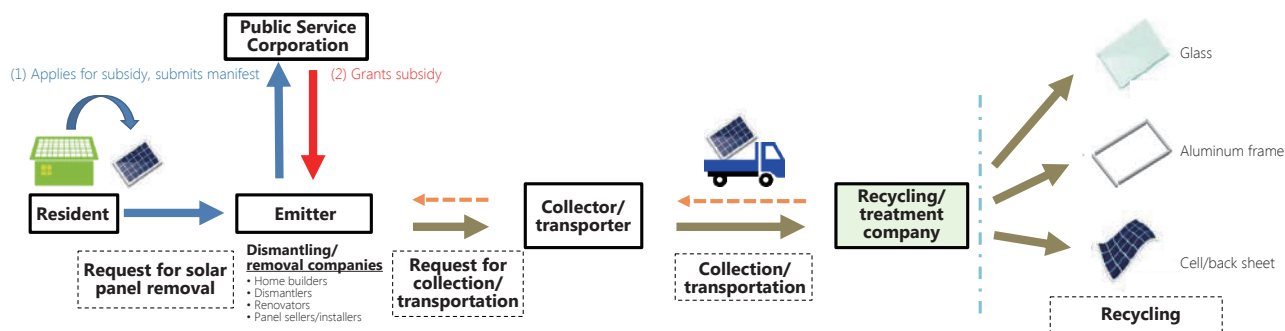
TMG is working to build an efficient recycling route for residential solar panels, and is committed to various public relations activities related to solar panel recycling for Tokyo residents and businesses.

In order to build a recycling route for solar panels, TMG subsidizes part of the recycling costs as they are higher than those for waste disposal by landfill.

We are promoting efforts toward the advanced circular use of solar panels in cooperation with businesses involved in different processes from removal to treatment.



Video: Removing Used Residential Solar Panels



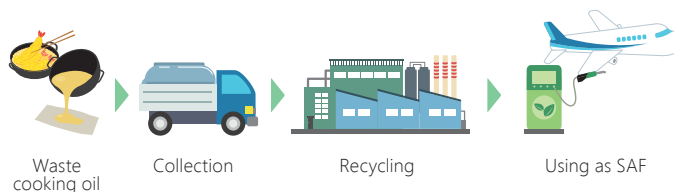
Mechanism for subsidizing recycling costs

Promoting SAF made from waste cooking oil and other waste materials

SAF* is a sustainable aviation fuel produced from waste cooking oil, wood, sugarcane, and various other raw materials. It allows greenhouse gas emissions to be significantly reduced compared to conventional fuels.

TMG will work to establish transportation routes to SAF manufacturing sites through collaborative projects with companies that collect waste cooking oil in Tokyo, which is the raw material for SAF. This initiative will also involve cooperation with municipalities that collect waste cooking oil and companies that are developing manufacturing technologies using waste materials in Tokyo.

Additionally, TMG will subsidize businesses that use air cargo transportation with SAF to cover the additional costs caused by its use.



* Abbreviation of sustainable aviation fuel

Safe recycling of small rechargeable batteries

Small rechargeable batteries are used in familiar rechargeable devices, but they have become a social problem as they can cause fires during disposal or processing.

TMG is working with municipalities and industry organizations to raise awareness of the need for separate disposal, and is also conducting joint research with Waseda University to develop a safe and secure processing flow for small lithium-ion batteries.

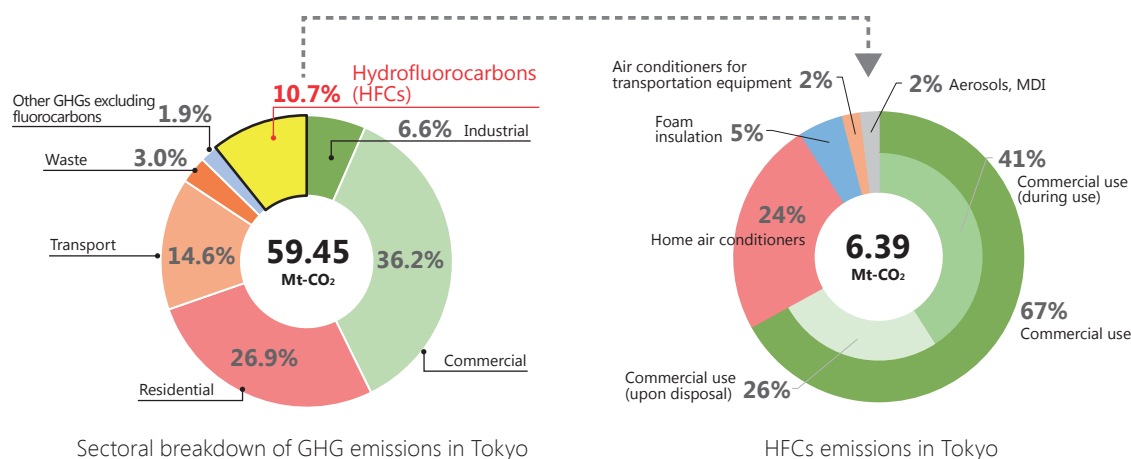


Poster with a common design for local governments and businesses

Efforts toward Zero Hydrofluorocarbon Emissions

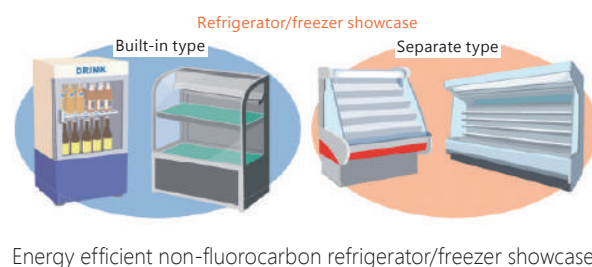
In FY 2022, Tokyo emitted 6.39 million tonnes of CO₂ equivalent from hydrofluorocarbons (HFCs), which accounted for approximately 10% of the city's greenhouse gas emissions. Fluorocarbons have an extremely strong greenhouse effect and cannot be recovered once released into the air.

Therefore, TMG will curb the use of new fluorocarbons and eliminate leakage from existing equipment containing fluorocarbons. To achieve zero fluorocarbon emissions, TMG will promote emission reduction measures throughout the life cycle of equipment, from manufacture, use, through to disposal, in cooperation with the national government and businesses.



► Promoting the Spread of Non-Fluorocarbon Equipment

To reduce fluorocarbon emissions, it is also important to promote the use of equipment that does not use fluorocarbons as refrigerants. Approximately 60% of fluorocarbons emitted by equipment in use come from small and medium-sized refrigeration/freezing equipment. TMG subsidizes large companies, small and medium-sized businesses, and other organizations that introduce energy efficient non-fluorocarbon equipment.



► Measures for Leakage during Use and Recovery upon Disposal

TMG is promoting on-site guidance and other efforts by fluorocarbon inspectors. To further reduce fluorocarbon leakage, we are exploring the use of AI for on-site inspections, and raising awareness of the Fluorocarbon Emissions Control Act.



Leakage of fluorocarbons



On-site guidance by fluorocarbon inspectors

Promoting Climate Change Adaptation Measures



The Tokyo Climate Change Adaptation Plan was revised in March 2024 in light of the announcement of the TOKYO Resilience Project *Upgrade I* in December 2023, which consists of measures for floods and storms, including the further promotion of river maintenance, such as revetment and regulating reservoirs as well as the enactment of the revised Climate Change Adaptation Act in April 2023 with the aim of strengthening measures for heat stroke.

► Measures for Heat Stroke

Under the revised Climate Change Adaptation Act, the operation of Special Heat Stroke Alert and Heat Stroke Alert will begin in the summer of 2024.

Key points of the revised Climate Change Adaptation Act

- ✓ A heat stroke countermeasures implementation plan has been formulated by the government to halve the current number of heat stroke deaths by 2030.
- ✓ In preparation for Special Heat Stroke Alert, municipal mayors are required to designate facilities equipped with air conditioners and meeting additional requirements as cooling shelters.

TMG has strengthened measures for heat stroke, encouraging heat stroke prevention actions and supporting municipalities in preparing cooling shelters and raising awareness of them.

TOKYO Zero Heat Stroke Action Project



A partnership agreement was concluded with the Japan Weather Association. Experts in heat stroke prevention were dispatched as lecturers to events in municipalities.



Cooling shelters
TOKYO Cool Spots



TOKYO Resilience Project *Upgrade I*

To realize a resilient Tokyo in the 2040s, TMG launched the TOKYO Resilience Project as a measure against five risks threatening Tokyo. We published the TOKYO Resilience Project *Upgrade I* in December 2023 to strengthen climate change measures and will further promote the initiatives.

Measures against five risks

- (1) Preparations for floods and storms, (2) Preparations for earthquakes,
- (3) Preparations for volcanic eruptions, (4) Preparations for power and communications outages, etc., (5) Creating a city that is also highly prepared for infectious diseases



Bold Acceleration of TMG's Initiatives for Its Own Sustainability

As a business that consumes a lot of energy and resources, TMG with "Let's Start from Here" in mind and under the Zero Emission TMG Action Plan is intensifying its efforts to reduce greenhouse gas emissions associated with its own office work and taking the lead in implementing reforms to achieve a 2030 Carbon Half.



Installation of solar power generation equipment at TMG facilities

To make maximum use of the potential of public facilities, TMG is accelerating the installation of solar power generation equipment at its existing facilities in addition to those newly constructed or renovated and will complete the installation at all of its applicable facilities by FY 2030.

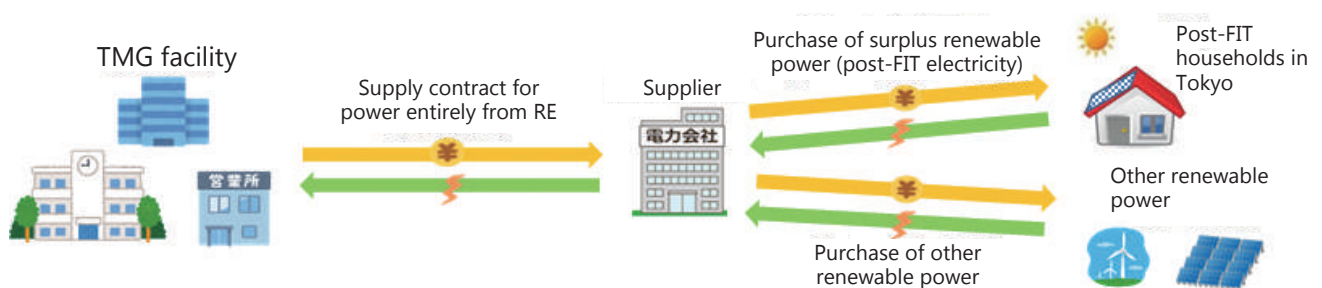


Tokyo Big Sight

TMG Power Plan

TMG facilities (governor's bureaus/departments) consume approximately 800 GWh of electricity, which is equivalent to approximately 1% of the electricity consumption in Tokyo. Therefore, TMG wants all electricity used at TMG facilities (governor's bureaus/departments) to be sourced from renewable energy by 2030.

Since FY 2019, we have switched electricity supplied to the TMG No.1 Building to power entirely sourced from renewable energy. In addition, since FY 2020, we have been promoting the TMG Power Plan that aggressively uses power entirely sourced from renewable energy at TMG facilities, which includes post-FIT electricity generated by solar power generators at home in Tokyo.



Reduction of single-use plastics

TMG is working to reduce the incineration of plastic waste from the TMG Buildings through the reduction and circular use of single-use plastics.

TMG Plastic Reduction Policy formulated in June 2019

It aims to ban the use of single-use plastic cups in principle at events hosted by TMG by FY 2024.

Promotion of measures for fluorocarbons

At TMG facilities, fluorocarbons are used as refrigerants for air conditioners and refrigeration/freezing equipment. We will steadily reduce fluorocarbon emissions from the TMG Buildings by promoting the switch to non-fluorocarbon equipment and proper equipment control.



Collaboration with Municipalities

TMG implemented three comprehensive subsidy programs for municipalities from FY 2009 to FY 2023, raising their level of environmental policies while decisively promoting efforts throughout Tokyo.

From FY 2024 onwards, we will create a new subsidy program for municipalities, which will provide intensive and focused support for them, and further promote environmental policies in the entire city to achieve the 2030 goals set out in the Tokyo Environmental Master Plan.



International Contribution and Exchange

TMG will further enhance its initiatives and contribute to the solving of global environmental issues by exercising international leadership as one of the world's largest cities, promoting cooperation with overseas cities, and sharing knowledge and technologies with them. We will improve our international presence by strengthening information dissemination and approaches to the rest of the world.



Winning CDP's "Cities A List" award (highest rating) for the third consecutive year from 2021 to 2023, which evaluates climate change initiatives and information disclosure

Active approaches and contribution to the international community

TMG will actively participate in international inter-city network activities and international conferences held by C40 (C40 Cities Climate Leadership Group), ICLEI (Local Governments for Sustainability), and other international organizations to reinforce cooperation for achieving common objectives, such as climate change measures.



COP28 Local Climate Action Summit

Improving international presence

Leveraging its connections with overseas cities, TMG shares information about its pioneering initiatives that take the lead in the world. We strategically develop the climate action movement "TIME TO ACT" from Tokyo, urging the world to accelerate effective measures.

To further the development of an international supply chain and related technologies, we host the Hydrogen Energy Conference for Action, HENCA Tokyo, focusing on the early social implementation of hydrogen energy.



TIME TO ACT 2023 - Energy Decarbonization



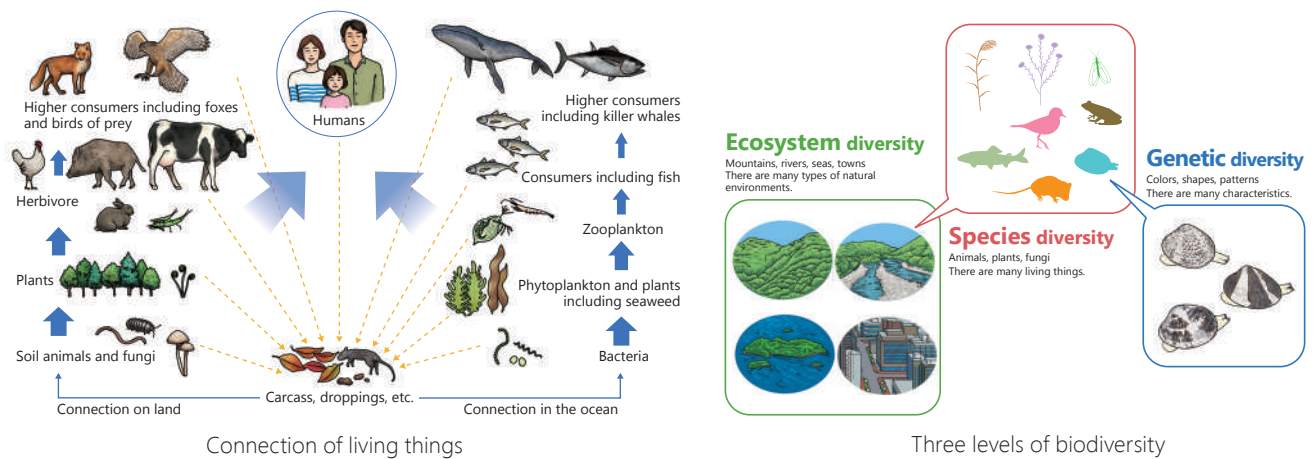
HENCA Tokyo 2023 - Social Implementation of Hydrogen by 2030



Realization of an Environmentally Symbiotic, Prosperous Society that Continues to Benefit from Biodiversity

► What is Biodiversity?

The term “biodiversity” refers to a situation where a variety of creatures with unique characteristics are able to coexist in harmony directly and indirectly, taking advantage of each other’s characteristics in a variety of different environments. Biodiversity is said to cover three levels of diversity: Many types of living things, a variety of environments, and different genes even within the same type of a living thing.



Benefits of biodiversity (ecosystem services)

Biodiversity is something irreplaceable created over long periods through a variety of lifeforms, including human beings. Benefits of biodiversity, called ecosystem services, are essential to our lives. In order to make the sustainable use of the benefits of biodiversity, we need to promote the conservation and restoration of biodiversity.

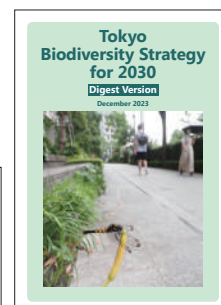


Four ecosystem services

► Tokyo Local Biodiversity Strategy

TMG revised and published the Tokyo Local Biodiversity Strategy in April 2023.

In the Tokyo Local Biodiversity Strategy, we have set achieving a nature-positive framework as one of the 2030 Targets, which means putting biodiversity on track to restoration by helping all entities that aim for an environmentally symbiotic, prosperous society work together to promote the conservation and sustainable use of biodiversity. It presents basic strategies and action plans for various entities to proceed with their efforts in order to achieve this goal.



Three basic strategies in the Tokyo Local Biodiversity Strategy



Promoting the conservation and recovery of biodiversity, handing down the luxuriant nature of Tokyo to future generations

TMG will hand down the luxuriant nature of Tokyo to future generations by conserving good biodiversity that remains today and restoring biodiversity that has become somewhat deteriorated based on basic information on the nature of Tokyo.



Using the benefits of biodiversity in a sustainable manner, utilizing the functions of nature to improve the lives of Tokyo residents

TMG will use the benefits of biodiversity in and outside Tokyo, such as healing and enrichment opportunities, the revitalization of local communities, disaster preparedness and mitigation, and the adjustment of the climate, in a sustainable manner to improve the lives of Tokyo residents.



Recognizing the value of biodiversity, changing that idea into actions that address global issues as well as those in Tokyo

TMG will turn its actions into those dealing with issues across Japan and throughout the world as well as in Tokyo by recognizing the value of biodiversity and treating it as vital.

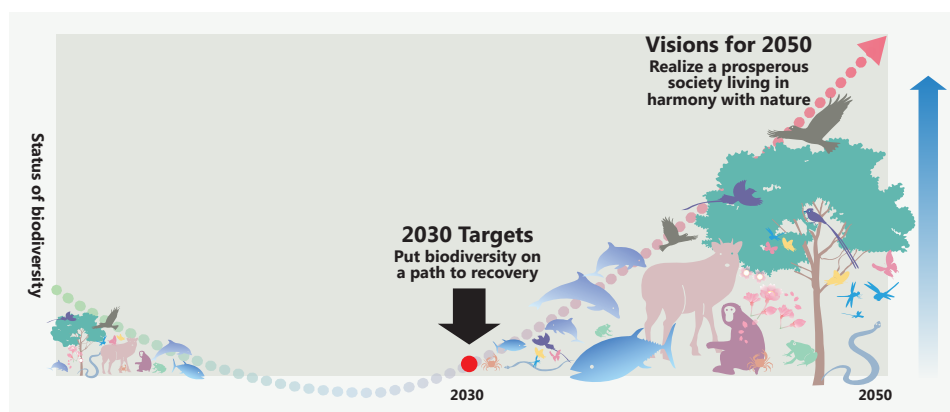


Image of achieving a nature-positive framework

“Nature-positive” means halting and reversing biodiversity loss to halt nature loss and put it on the path to recovery by 2030, measured from a baseline of 2020.

Promoting the conservation and recovery of biodiversity, handing down the luxuriant nature of Tokyo to future generations

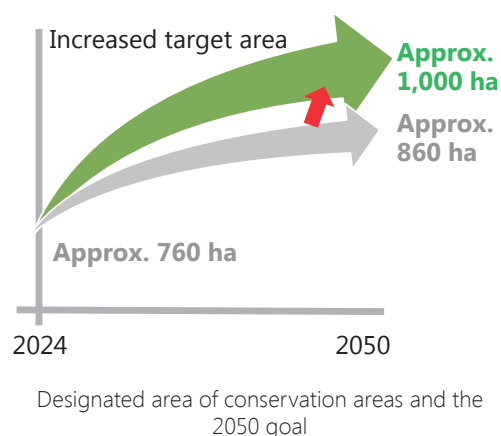
► Preserving Areas with Rich Natural Environments

Conservation Area System

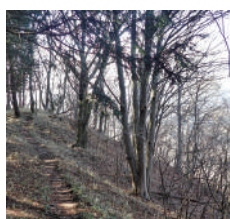
To conserve the valuable natural environments in urban neighborhoods, including satoyama (open light-filled woodland near populated areas) in mountainous and hilly terrains, we promote the designation of conservation areas for their preservation and restoration.

In January 2024, TMG raised the 2050 target for the designation and public ownership of conservation areas from approximately 860 hectares to approximately 1,000 hectares, aiming to accelerate designation and acquisition of new conservation areas.

TMG is strengthening its efforts to maintain and improve the quality of conservation areas by establishing the Tokyo Metropolitan Center for Biodiversity for promoting a range of biodiversity initiatives in FY 2024 to implement effective management in collaboration with various entities.



Types of conservation areas:



Natural environment conservation area



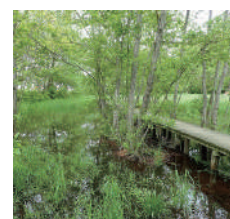
Forest environment conservation area



Satoyama conservation area



Historical environment conservation area



Green space conservation area

Conserving precious nature together with Tokyo residents

In conservation areas, local volunteer groups play a central role in green space conservation activities, such as cutting undergrowth and thinning trees. In cooperation with such volunteer groups, TMG provides opportunities for experience-based programs to retain human resources who carry out conservation activities, and works with experts to select appropriate conservation measures and verify their effects aiming for management with consideration for biodiversity.



Rice planting in a satoyama conservation area

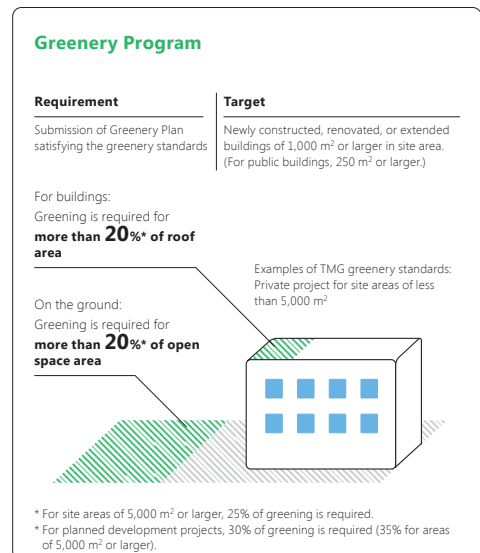


Cutting undergrowth in a green space conservation area

► Conservation and Creation of Greenery in Urban Districts

The percentage of green and blue spaces (water areas) for 2018 announced by TMG is 52.5% for the entire mainland, continuing its slight decline since 2013. In accordance with the Greenery Program, TMG has been creating greenery in parallel with urban development.

TMG has a registration system for green spaces that feature a significant proportion of native species. These registered green spaces are awarded special logos and are prominently highlighted on the TMG website.



► Conservation of Rare Wild Fauna and Flora, and Measures for Alien Species

In Tokyo, as many as 1,845 species on the mainland and 1,242 species on the islands have been selected in the Wildlife Species in Serious Need of Conservation in Tokyo (Tokyo Red List), of which 207 species on the mainland and 57 species on the islands have already become extinct.

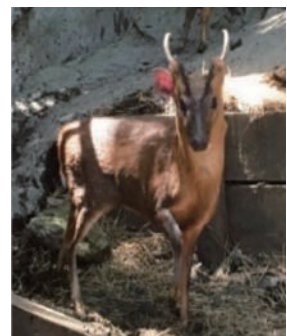
To prevent the further extinction of rare creatures in Tokyo, TMG conserves rare wild fauna and flora, designates important natural land as protected areas, and protects and breeds endangered species through ex-situ conservation.



Promoting active pest control of alien species

In recent years, various alien species brought in from home and abroad have significantly impacted native species. TMG is working to mitigate the damage caused by these alien species, such as raccoons, American crayfish, and red-eared slider turtles, which pose a substantial threat to Tokyo's ecosystem.

As a measure against Reeves' muntjacs on Izu Oshima Island, TMG is implementing an advanced pest control plan using ICT technology, including drones, to efficiently capture these invasive species.



Reeves' muntjac on Oshima Island



Raccoon

Source: Ministry of the Environment



American crayfish

Source: Ministry of the Environment



Red-eared slider turtle

Source: Ministry of the Environment

Measures against Asiatic black bears

In Tokyo, the Asiatic black bear is classified as a near-threatened species and is under protection. However, it is crucial to prevent their encroachment into human settlements to ensure they do not pose a threat to human safety.

TMG strives to minimize the capture and killing of Asiatic black bears by closely monitoring their habitats and establishing buffer zones. We also digitize bear sighting maps to further enhance the safety of Tokyo residents.



Asiatic black bear photographed by a sensor camera

► Collection, Storage, Analysis, and Dissemination of Natural Environment Information

Collecting information on living things with Tokyo residents

In order to effectively and efficiently collect and accumulate information on wildlife that will be the basis for solving biodiversity issues in Tokyo, TMG is developing a project in which Tokyo residents participate to help collect and accumulate such information using AI apps for creature survey.



Participatory app for collecting information on living things (Biome)

Creation of the TOKYO Digital Wildlife Inventory

The TOKYO Digital Wildlife Inventory is analogous to a "resident register" for wildlife in Tokyo. The inventory combines data of citizens and experts to allow anyone to easily search on a dedicated website for when and where what living things lived, and display the results on a digital map.

The dragonfly inventory was released in May 2024. Information will be added and updated whenever necessary.



デジタル版 野生生物目録 東京いさものの台帳



Natural Environment Digital Museum Concept

TMG is developing a Natural Environment Digital Museum Concept. This initiative aims to aggregate comprehensive biodiversity information from across Tokyo and use digital technology to highlight the city's natural beauty.

In addition, we have already publicized DX content, such as "Tama River 360° Tour," to help residents learn about Tokyo's nature and encourage actions to preserve it.



"Digital View of Living Things in Tokyo" Exhibition at SusHi Tech Square



Metaverse content presented at Biodiversity TOKYO

Using the benefits of biodiversity in a sustainable manner, utilizing the functions of nature to improve the lives of Tokyo residents

► Promotion of Tokyo-NbS Action

The idea of using the functions of nature in a sustainable manner to solve various social issues is called “Nature-based Solutions” or NbS.

To use the benefits of biodiversity in a sustainable manner and utilize the functions of nature to improve the quality of life of Tokyo residents, TMG is recruiting Tokyo-NbS Action Members who will be involved in a variety of activities leading to NbS in Tokyo.



Tokyo-NbS Action

► Ogasawara Islands Registered as World Heritage Site in June 2011

Consisting of over 30 islands, the Ogasawara Islands are located in the North West Pacific 1,000 km south of Tokyo, where dolphins and whales inhabit a beautiful blue ocean.

Geological features on the island show the evolutionary process of oceanic island arcs.

These islands have never been part of any continent, and so the living creatures able to reach the islands over the sea could survive only by adapting to the environment. The Ogasawara Islands were evaluated as an area with a precious ecosystem and registered as a natural World Heritage site in June 2011 as they reveal the evolution of and connection between living things not seen in any other areas.

To protect the value of the World Heritage site, we are removing influential alien species while conserving decreasing endemic species. We are also developing ecotourism to help protect and properly use valuable natural resources and are striving to prevent the entry of new alien species.



Chloris sinica kittlitzii
(endangered class IA on the islands)



View of ecotourism



Preventing alien species from entering the islands through leather shoes

► Natural Parks

Meiji no Mori Takao Quasi-National Park

It only takes approximately 50 minutes to get from the center of Tokyo to Meiji no Mori Takao Quasi-National Park registered in the Michelin Green Guide. Part of the park is the property of the Head Temple Takao-san Yakuo-in that has historical and cultural features as well as magnificent landscapes. It also offers an ecosystem of abundant nature despite its proximity to central Tokyo, well deserving its world famous reputation.

TMG strives to ensure the safe and secure use of the natural park by for example using 360-degree camera images to show information on the seven mountain trails (routes) from the foot of Mt. Takao to the summit.



Route description through AR



Natural parks with various features

In addition to Meiji no Mori Takao Quasi-National Park, there are nine natural parks in Tokyo, each having its own distinctive features. TMG deploys Tokyo Rangers to promote the protection and appropriate use and management of nature in areas surrounding natural parks.

In addition, TMG has set up visitor centers that exhibit information on nature around natural parks and provide guidance on how to use them, Tomin-no-Mori facilities for recreational activities to become familiar with nature, and scenic seaside and mountain villages with accommodation facilities.



Fuji-Hakone Izu National Park (Miyakejima) characterized by different volcanic landscapes on each island



Chichibu Tama Kai National Park (Mitosan) where we can enjoy mountain-walking through all four seasons

Recognizing the value of biodiversity, changing that idea into actions that address global issues as well as those in Tokyo

► Promotion of Understanding of Biodiversity

A survey in FY 2023 showed that the percentage of Tokyo residents recognizing biodiversity is 74.1%.

To conserve and restore biodiversity and use its benefits in a sustainable manner, Tokyo residents and other actors have to correctly recognize the mechanism, value, and status quo of biodiversity in Tokyo, and deepen their understanding and interest in it.

TMG is working to raise more awareness of biodiversity to enable each and every Tokyo resident to recognize the value of biodiversity and treat it as vital.

Promoting nature experience activities

TMG is actively raising awareness of places and events in Tokyo where people can enjoy observing living things and experiencing nature. Using facilities where people can learn about various natural land and biodiversity in Tokyo, TMG is encouraging natural environment education and nature experience activities.



Observing living things at Takao Forest Nature School



Participatory program by the Sumida River to learn about Tokyo's diverse nature

Column

August 11 is Mountain Day.

Mountain Day is a national holiday established to provide opportunities for people to connect with mountains and appreciate their blessings.

On August 11 every year, a national conference is held to raise public awareness of the significance of this holiday and its purpose.

The 8th conference was held in Tokyo in 2024, attracting many participants to the commemorative ceremony and welcome festival.



Commemorative ceremony



Welcome festival



Poster



Realization of a Better Urban Environment

Further Improving Air Quality Etc.

A period of high economic growth in Tokyo after World War II saw rapid industrialization and a surge in automobile ownership, causing severe environmental issues and threatening the health and welfare of its residents.

TMG has promoted various pioneering environmental measures and made great strides in solving these environmental issues. We will not only strive to preserve the living conditions improved through existing measures, but also promote new initiatives to create a higher quality environment where all Tokyo residents will be able to enjoy and experience a higher quality of life with peace of mind.

▶ Tracking Changes in the Air Quality of Tokyo

1970s

TMG regulated air pollutants such as soot and smoke from factories through ordinances and other regulations.

1990s

In parallel with an increase in traffic, air pollution escalated, which was attributable to black smoke (particulate matter) caused by automotive emissions.

2000s

TMG regulated exhaust gas from diesel vehicles from 2003 under the Tokyo Metropolitan Environmental Security Ordinance.

The air quality in Tokyo significantly improved from 2004 in terms of suspended particulate matter (SPM).

Present

The air environment in Tokyo has improved, allowing the environmental standards for PM2.5 to be met at all monitoring stations for the first time in FY 2019. However, the concentration of photochemical oxidants still exceeds environmental standards.

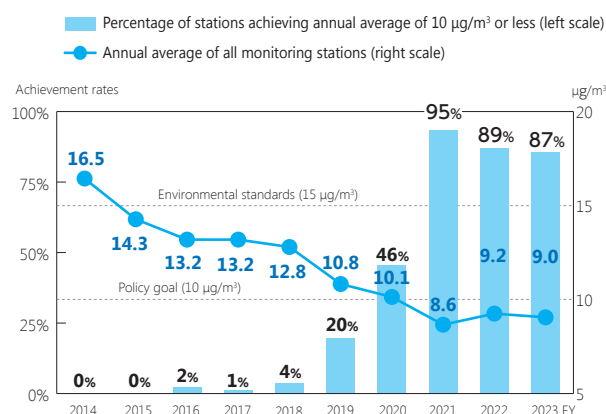


Kasumigaseki

▶ Recent Efforts

As the concentration of PM2.5 and photochemical oxidants has to be lowered, TMG is working on measures to reduce emissions of the causative agents, including volatile organic compounds (VOCs) and nitrogen oxide (NOx).

Since the environmental standards for PM2.5 were met at all monitoring stations in FY 2019, TMG will build on the existing measures for further improvements, aiming to reduce the annual average of all monitoring stations to 10 $\mu\text{g}/\text{m}^3$ or less by FY 2026 and ensure that the value is kept consistently below 10 $\mu\text{g}/\text{m}^3$ through to FY 2030.

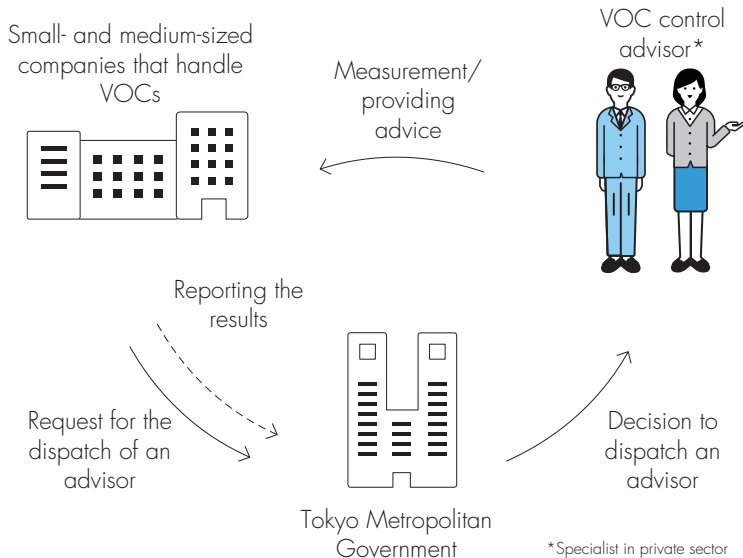




► Efforts for Comfortable Air Quality

VOC Control Advisor Dispatching Program

Advisors are dispatched to factories that use VOCs.



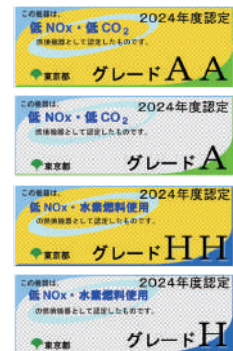
Guide for Reducing VOC Emissions

Guidebooks are distributed to VOC-emitting businesses for emissions control.



Certification labels for small combustion devices with good environmental performance

A label of a specific grade is attached to a certified device.



► Air Environment Improvement Promotion Project to Realize a Clear Sky

By recruiting businesses that work on NOx or VOC emission reduction measures as Clear Sky Supporters and making their efforts public, TMG encourages emissions reductions through voluntary efforts and raises awareness of the situation and provides information to Tokyo residents.



► Measures for Asbestos

There are still many buildings containing asbestos in Tokyo, and the number of buildings demolished is expected to remain at a high level until around 2050. Therefore, TMG will enhance measures taken at the stage of demolition in normal times as well as strengthening other measures to prevent dispersion from collapsed buildings in the event of a disaster.

Further guidance and technical support for businesses

TMG will ensure that the knowledge and skills of preventing asbestos dispersion during construction are firmly established in dismantlers by making sure that they are thoroughly informed of measures for asbestos based on the law, and strengthening on-site guidance and technical support for demolition crews.



On-site guidance on asbestos

Reducing Risks Caused by Chemical Substances Etc.

► Measures for Chemical Substances

To prevent health hazards caused by chemical substances, TMG ensures that businesses handling chemical substances properly control them through the PRTR program and the chemical substance control program. In addition to normal times, we prevent leakage and outflows of chemical substances caused by flood at the time of large earthquakes or typhoons to curb the spread of environmental pollution.

TMG monitors substances with a risk of health effects and publishes the resulting data in a timely manner so that Tokyo residents and businesses can avoid such risks.

Regarding organic fluorine compounds like PFOS, we have proactively monitored their concentrations in groundwater ahead of the national government. Additionally, we have implemented measures to prohibit the consumption of groundwater when its concentrations exceed the provisional guideline values of the national government.



View of air monitoring

► Measures for Soil Pollution

TMG will establish measures for soil pollution that consider the 3Rs of soil, and provide support for businesses and raise their awareness so that they can voluntarily compare and consider these measures to choose a rational option.

Through the open data methodology, we will ensure smooth land use, control land with non-conforming soil, identify the actual state of naturally contaminated soil, and keep traceability in place.

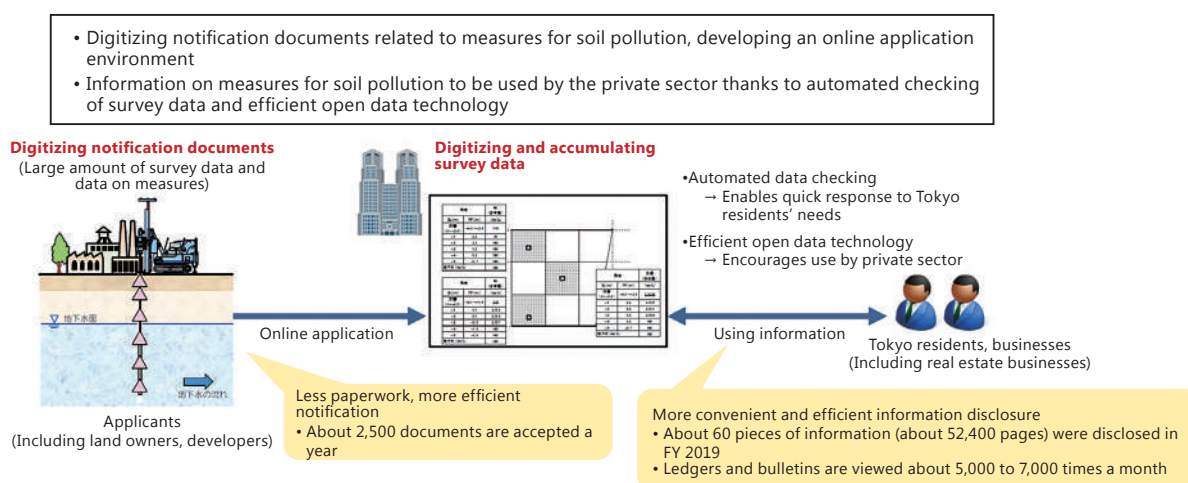
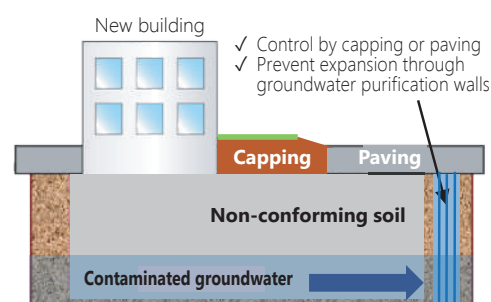


Image of open data

Supporting sustainable soil pollution countermeasures at former factory sites

To encourage the adoption of new business practices and development of countermeasure technologies, TMG subsidizes entities that start new ventures at former factory sites of small and medium-sized businesses. The subsidies cover costs for:

- ✓ Capping or paving over contaminated soil
- ✓ Measures to prevent the spread of contaminated groundwater





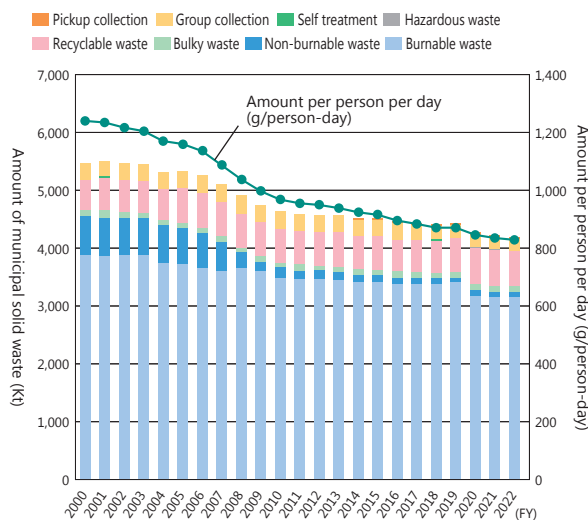
Further Promoting the Proper Treatment of Waste

► Status Quo of Waste Treatment in Tokyo

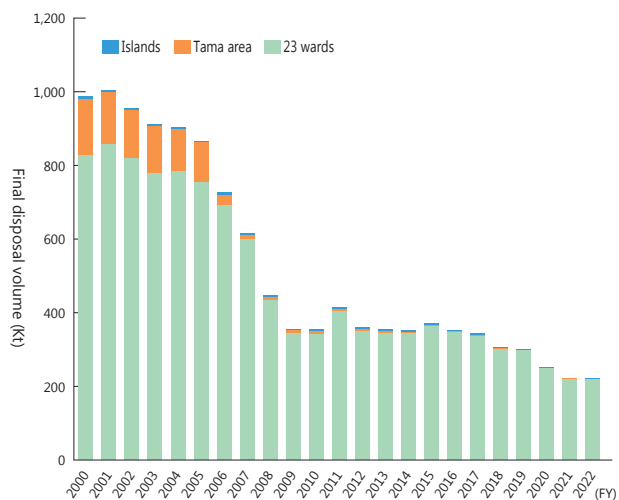
The amount of municipal solid waste generated in Tokyo per year decreased from approximately 5.50 million tonnes in the early 2000s to approximately 4.18 million tonnes in FY 2022. Partly due to progress in 3R initiatives, the amount of waste per day per Tokyo resident decreased by approximately 30% from FY 2000. The final disposal volume of municipal solid waste in Tokyo steadily decreased until FY 2009 due to improvements in the recycling rate and other reasons. It remained flat for a while, but has been trending downward again in recent years.

The amount of industrial waste generated in Tokyo has hovered around 25 million tonnes in recent years.

Changes in the amount of municipal solid waste in Tokyo



Changes in municipal solid waste final disposal volume in Tokyo



► Strengthening the Waste Treatment System

Wide-area cooperation to prevent improper disposal of industrial waste

In 2000, at the request of TMG, a program called “Industrial Waste Scrum” was established in 21 local governments to eradicate illegal dumping. As of FY 2024, the organization consists of 37 local governments: Tokyo, 11 prefectures, and 25 ordinance-designated cities and core cities in the Kanto-Koshinetsu region, Fukushima, and Shizuoka prefectures.



Left: Roadside survey of industrial waste collection and transportation vehicles



Right: On-site survey at the source of waste

► Strengthening Measures for Disaster Waste

TMG revised the TMG Disaster Waste Management Plan in September 2023 in light of changes in the damage estimates for the Tokyo Inland Earthquake and an increase in floods and storms in recent years.

Aid for the disposal of disaster waste from the Noto Earthquake

In order to assist local governments affected by the 2024 Noto Earthquake, TMG has dispatched officials at the request of the Ministry of the Environment to provide technical support for the disposal of disaster waste.



Main Environmental Initiatives of the Tokyo Metropolitan Government

In addition to the initiatives described above, TMG is developing a variety of environmental initiatives to realize a green and resilient global city Tokyo opening up a future.

For more information, visit the websites of the Bureau of Environment.

Tokyo Environmental Master Plan



Tokyo Environment White Paper



Zero Emission Tokyo Strategy 2020 Update & Report

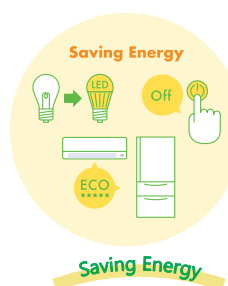
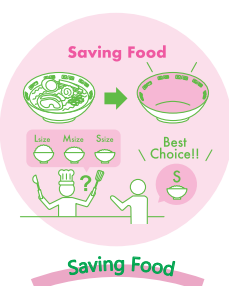


Future Tokyo: Tokyo's Long-Term Strategy



Recruiting Participants in Team Mottainai!

- ▶ Reduce food waste and single-use plastics, work on energy efficiency, and develop an environmentally friendly lifestyle.



For more information:



Use TMG's Subsidy Programs to Promote Environmental Efforts!

- ▶ This handbook presents TMG's environment-related subsidy programs and support measures categorized into those for individuals and households and those for businesses.

