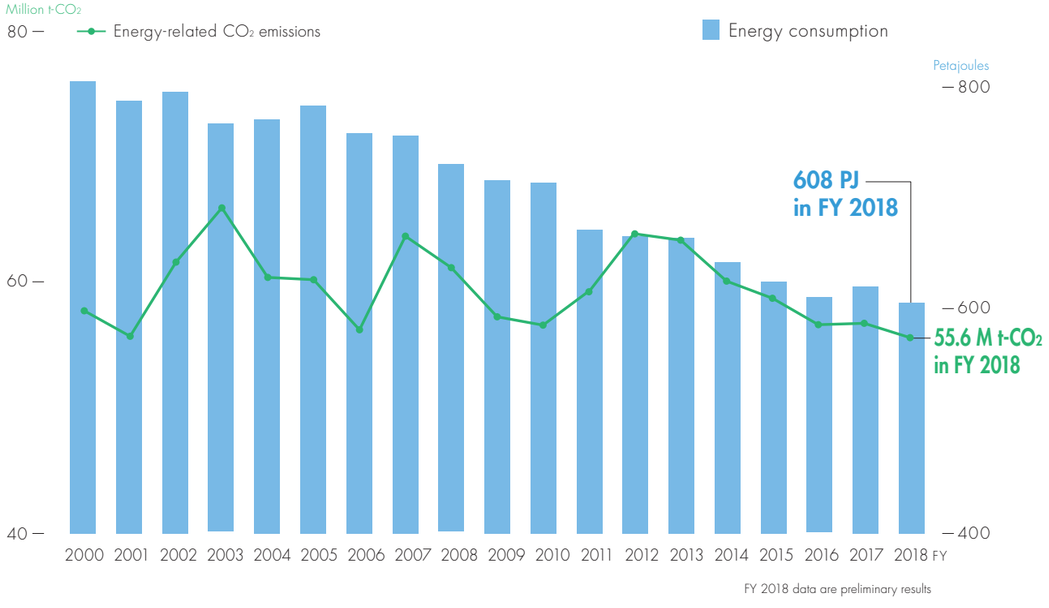
SUSTAINABLE BUILDING POLICY

As a massive energy consumer, TMG has taken pioneering measures for climate change mitigation and energy efficient in the light of the Paris Agreement's long-term goal. Pioneering efforts, such as the Tokyo Cap-and-Trade Program, fine-tuned to the characteristics of a megacity densely packed with a variety of buildings including offices, have produced concrete results and attracted considerable attention of foreign cities, thanks to support from many businesses, citizens, and NPOs in Tokyo.

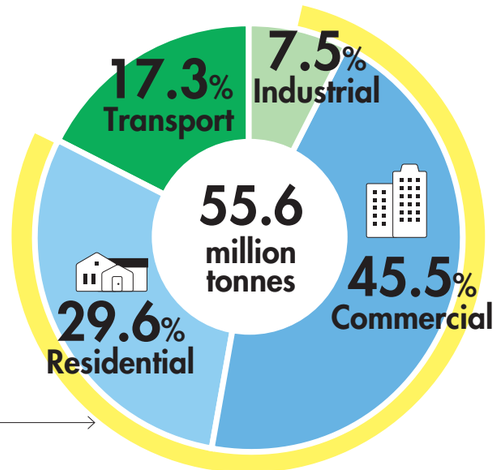
Tokyo's energy consumption has consistently been falling since its peak in FY 2010, however, CO_2 emissions originating from electricity supplied to Tokyo have increased following the shutdown of nuclear power plants in the aftermath of earthquakes in March 2011, compared to 2000 levels. Therefore, TMG has set an energy consumption target in addition to the greenhouse gas emission target in order to clarify energy efficiency efforts by citizens and businesses in Tokyo.



Trend of energy-related CO_2 emissions and energy consumption in Tokyo

Energy-related CO_2 Emissions in TOKYO

Tokyo's energy-related CO_2 emissions in FY 2018 amounted to 55.6 million tonnes, equivalent to the total emissions of Austria. Commercial and residential sectors constitute a large share of the CO_2 emissions in Tokyo.



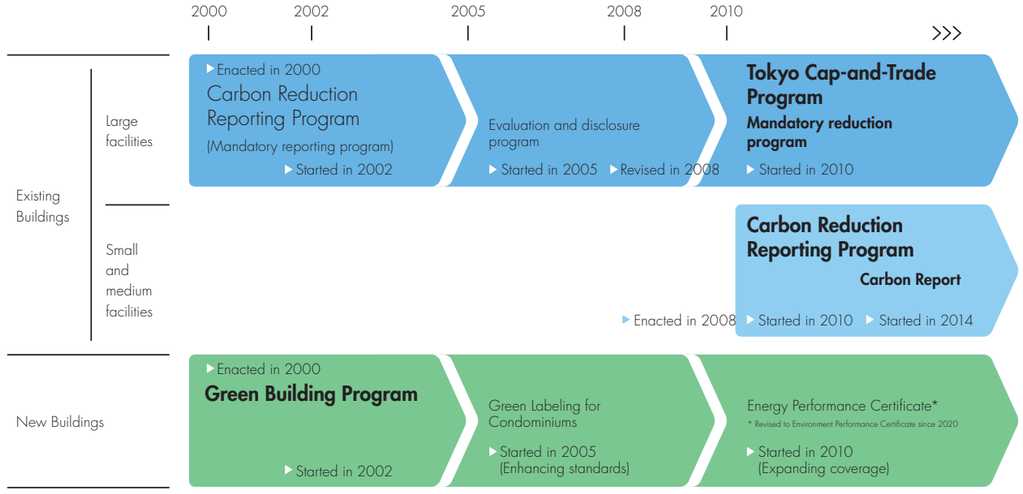
Buildings account for more than 70% of emissions.

Sectoral breakdown of energy-related CO_2 emissions in Tokyo (FY 2018)

Three Programs Supporting Sustainable Building Policy

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

At the core of Tokyo's sustainable building policy, we have the Tokyo Cap-and-Trade Program for existing large facilities, the Carbon Reduction Reporting Program for small and medium facilities, and the Green Building Program for new buildings. Since 2000 when the Tokyo Metropolitan Environmental Security Ordinance was enacted, we have developed effective policies with step-by-step reviews and enhancements.



World's First Urban Cap-and-Trade Program for Large Facilities

By revising its ordinances in April 2010, TMG introduced the Tokyo Cap-and-Trade Program, which sets mandatory CO_2 emission reduction targets for large facilities. This program is not only the first cap-and-trade scheme in Japan but also the world's first urban cap-and-trade scheme that covers the commercial as well as the industrial sector, including office buildings, which are often concentrated in megacities.
Owners of facilities covered by the scheme are required to meet their emission reduction requirements through on-site energy efficiency measures or through emissions trading. Measurements, annual reporting, and verification are also required. CO_2 emissions from covered facilities account for approximately 40% of those from the entire industrial and commercial sectors in Tokyo.

Program design

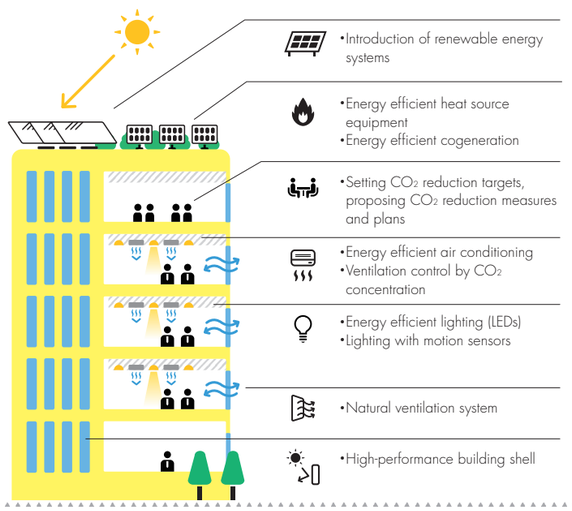
Covered facilities	Approx. 1,200 large CO_2-emitting facilities that consume 1,500 kiloliters or more (crude oil equivalent) of energy annually
Covered gas	Energy-related CO_2
Compliance periods	Five-year period 1st period: FY 2010-FY 2014 2nd period: FY 2015-FY 2019 3rd period: FY 2020 – FY 2024
Compliance factors	1st period: 8% for offices etc. or 6% for factories, etc. 2nd period: 17% or 15% respectively 3rd period: 27% or 25% respectively
Emission trading	Excess reductions and offset credits are tradable
Penalties	Fines, charges (1.3 times the shortfall) Publish the fact of violation

Top-Level Facilities

In the Tokyo Cap-and-Trade Program, facilities demonstrating outstanding performance in emissions reduction as well as in the introduction, use, and management of energy efficient equipment are certified as top-level facilities that receive lower compliance factors according to their rate of progress.
The certification standards for top-level facilities represent the highest-level energy efficiency measures feasible at present, stipulating more than 200 different energy efficiency measures in the case of office buildings.
In the second compliance period, 69 facilities were certified as top-level as of the end of FY 2019.
An increasing number of facilities use the standards as reference guidelines for energy efficiency in design and renovation processes.

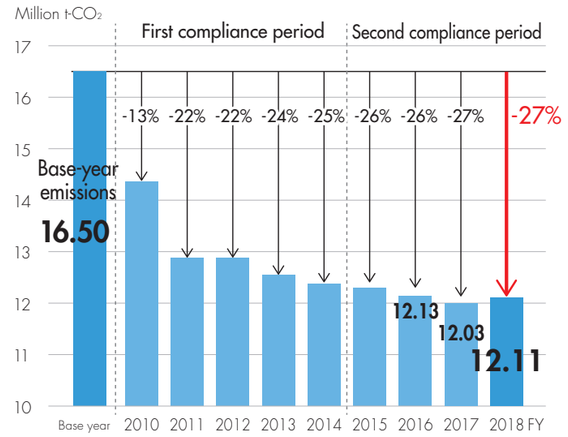
Facilities certified as top-level can use this logo.

Examples of energy efficiency efforts at top-level facilities



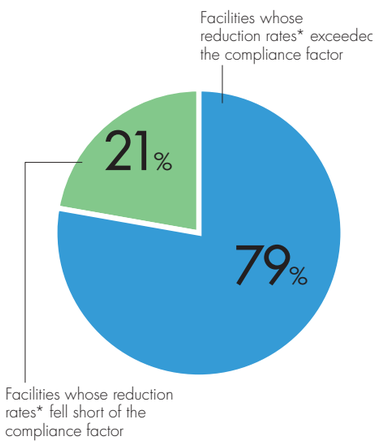
Achievement of 27% Reduction Compared to Base-Year Levels (FY 2018)

CO_2 emissions from the covered facilities in FY 2018, the fourth fiscal year of the second compliance period, were 12.11 million tonnes, a 27% reduction from base-year emissions through continued energy efficiency measures and the use of low carbon electricity and heat promoted at the covered facilities. Approximately 80% of the covered facilities have already achieved reductions over and above their compliance factors for the second compliance period.



Trend of total CO_2 emissions from facilities under Tokyo Cap-and-Trade

(Base-year-emissions and annual emissions are calculated using the CO_2 emission factor for electric power applied to the second compliance period)



*with respect to base-year levels

Ratio of compliance with reduction obligations for the second compliance period through their own energy efficiency measures in terms of results in FY 2018

Encouraging Additional CO_2 Reductions in the Third Compliance Period (FY 2020-2024) by Continuing Energy Efficiency and Promoting the Expanded Use of Renewable Energy

To realize TMG's goals for 2030 and "Zero Emission Facilities" desirable in the future, TMG will strive for further reduction at covered facilities in the third compliance period by setting new compliance factors, promoting further energy efficiency action, and enhancing a mechanism to encourage the use of renewable energy.

Items Applicable in the Third Compliance Period

- Compliance factors: 27% for office buildings etc. 25% for factories etc.
- Expanding incentives for promoting the use of low-carbon electricity (electricity from renewable energy sources)
  - All low-carbon electricity that has been procured is calculated as reductions at covered facilities
  - Additional reductions are calculated at covered facilities when procuring electricity with a high percentage of renewable energy sources

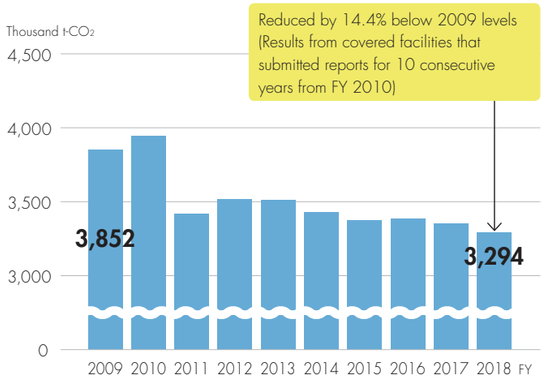
Realization of "Zero Carbon 4 Days in 2020" and cooperation in "Carbon Offset Programme for the Tokyo 2020 Games"

TMG has gained the cooperation of businesses under the Tokyo Cap-and-Trade Program in the provision of CO_2 reduction credits for the "Tokyo Zero Carbon 4 Days in 2020" project offsetting all CO_2 emissions generated across Tokyo during the four days of the opening and closing ceremonies of the Tokyo 2020 Games. We have also obtained the cooperation for the efforts made by the Tokyo 2020 Organising Committee on behalf of the host city for the Tokyo 2020 Games to offset CO_2 emitted by activities connected with the Games.
The amount of provided credit was 4.18 million t-CO_2 from 153 businesses.
(720,000 t-CO_2 will be allocated to the Tokyo Zero Carbon 4 Days in 2020 project for offsetting and 3.46 million t-CO_2 will be provided to the Tokyo 2020 Organising Committee. We wish to thank those who offered cooperation.)

SUSTAINABLE BUILDING POLICY_2

Carbon Reduction Reporting Program for Small and Medium Facilities

CO_2 emissions from small and medium facilities account for approximately 60% of the total of the combined industrial and commercial sectors in Tokyo, underlining the importance of reducing emissions from these facilities.
By revising its ordinances, TMG introduced the Carbon Reduction Reporting Program in April 2010 to encourage owners of small and medium facilities to identify their CO_2 emissions and implement energy efficiency measures. Since FY 2020, TMG has introduced a mechanism that evaluates and publicizes businesses with excellent reduction performance or that have made great efforts to introduce renewable energy in order to motivate businesses to take action.
Using data given in the reports, TMG provides Low Carbon Benchmarks to recognize their performance; self-rating of emission levels compared to the same business type and a Carbon Report that depicts energy efficiency levels in an easy-to-understand format.



Trend of emissions from covered facilities
(excluding facilities that submit reports voluntarily)

SUSTAINABLE BUILDING POLICY_3

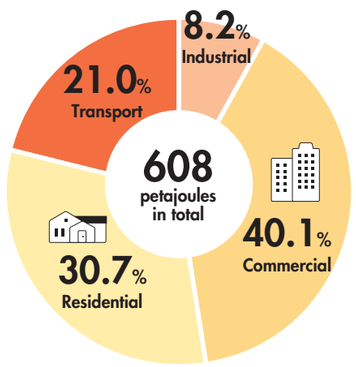
Green Building Program for New Buildings

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. Through this program, we encourage their voluntary environmental conservation efforts at the architectural planning stage and aim to form a market that attributes value to environmentally conscious buildings.
Subject to TMG's evaluation criteria, building owners make three-grade evaluations of their efforts in four areas of environmental considerations: rational use of energy, proper use of resources, natural environment conservation and mitigation of heat island effects.
Since FY 2020, TMG has expanded the program coverage to medium-sized buildings and introduced ZEB (Net Zero Energy Building) Evaluation as the highest rank in the energy efficiency assessment.

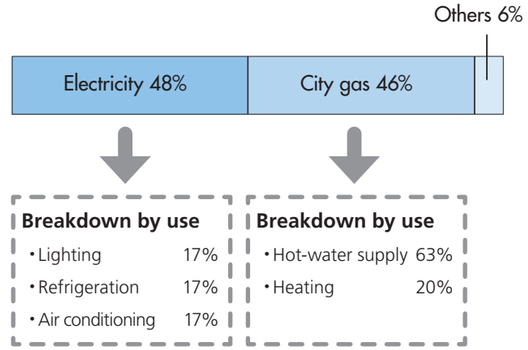
Condominium owners are required to display the environmental performance label on all advertisements upon sale or lease.

PROMOTING ENERGY EFFICIENCY MEASURES AT HOME

The energy consumption of the residential sector in Tokyo accounts for approximately 30% of total consumption, of which over 90% is caused by the use of electricity and city gas.
Through the LED light bulb exchange campaign from 2017 to 2018, TMG promoted the switch to LED from lighting with high energy consumption.
In order to encourage additional energy efficiency action at home, TMG continues promoting LED lights and expanding the introduction of energy-efficient home appliances and housing with high energy-efficient performance.



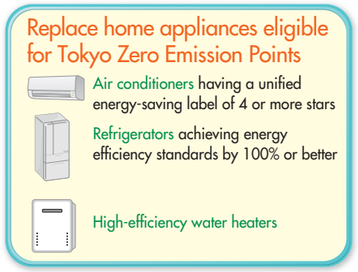
Sectoral breakdown of energy consumption in Tokyo (FY 2018)



Breakdown of energy consumption by use at home (FY 2018)

Promoting Zero Emission Action at Home

Since October 2019, TMG has been implementing new action to grant Tokyo Zero Emission Points that can be exchanged for gift certificates or LED light bulbs coupons. The points will be given to Tokyo residents who have replaced their air conditioners, refrigerators or water heaters, which typically consume larger amounts of energy, with those having a high energy-efficient performance.
TMG also provides energy efficiency advice to those who have made the replacement to improve their energy efficiency awareness.

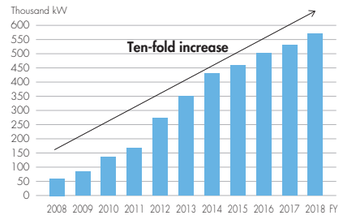


Promoting the Tokyo Zero Emission House

To reduce energy consumption at home, it is critical to make residential buildings more energy efficient, including improvements in thermal insulation.
Aiming for the spread of houses with high energy-efficient performance matching the regional characteristics of Tokyo, since October 2019 (through FY 2020) TMG has subsidized new residential buildings that meet the Tokyo Zero Emission House standards.

EXPANSION OF USE OF RENEWABLE ENERGY

Tokyo, one of the largest cities in the world, is a major consumer of energy. To realize a Zero Emission Tokyo, it is essential to further increase energy efficiency, and switch from fossil fuels to decarbonized energy, such as renewable energy.
FY 2018, power generated by renewable energy accounted for approximately 15.3% of the total electricity used in Tokyo. The introduction of solar power generation has been increased through support projects of TMG with information available online through the Tokyo Rooftop Solar Register, and the Feed-in-Tariff (FIT) system started by the national government in 2012.
Aiming for the decarbonization of all energy used in 2050, TMG develops efforts for local production and consumption and expanded use of renewable power.



Trend of solar power generator installation in Tokyo

Local Production and Consumption of Renewable Power Generated in Tokyo

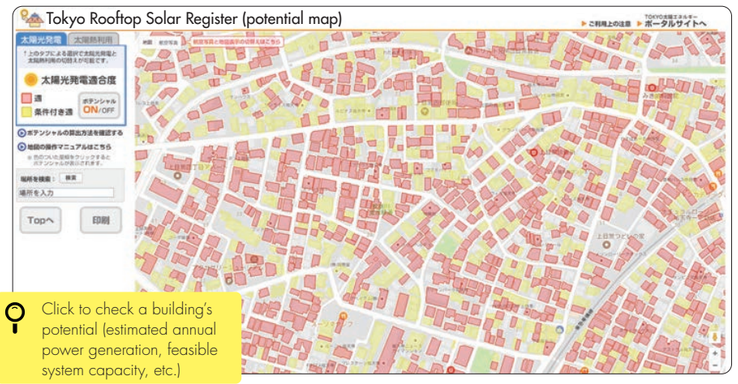
As natural disasters increase, local production and consumption of renewable energy is becoming more important from the perspective of improving local resilience, helping ensure autonomous power supplies in preparation for prolonged power outages.

Promoting self-sufficiency in electricity at home

With the aim of increasing the self-consumption of electricity by solar power generation at home and improving disaster preparedness in an emergency, TMG is implementing the Self-Consumption Plan subsidy project for houses with storage batteries installed.
We will receive electricity data for solar power generation from subsidized households to utilize it in determining TMG's policies to improve effective use of electricity in the future.

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.

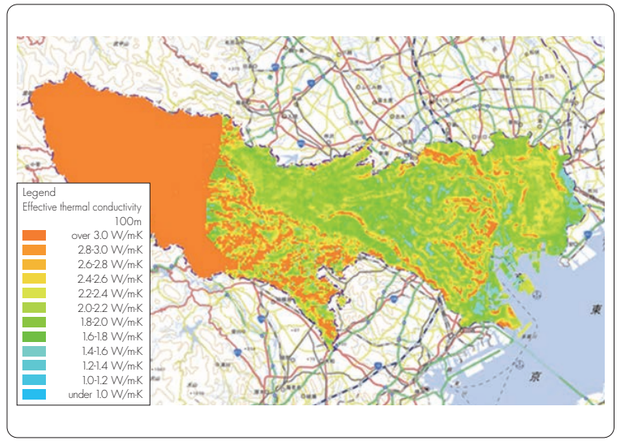


Click to check a building's potential (estimated annual power generation, feasible system capacity, etc.)


TMG's official mascot character: Roof Power

Ground source heat potential map

TMG provides online information on the potential for the adoption of geothermal heat and subsidizes the early stages of adoption.
We also encourage energy use matching business characteristics, including the use of sewage heat, as well as small hydroelectric generation at water supply and sewage facilities.



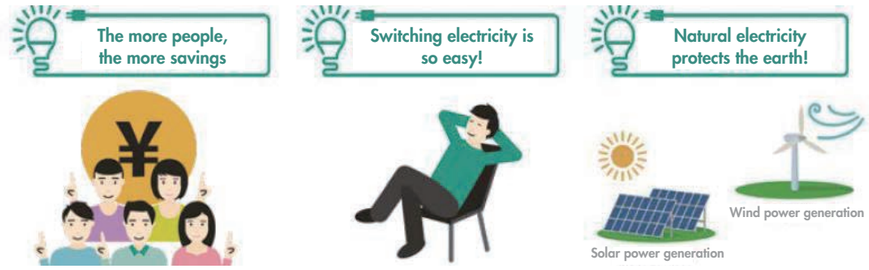
Ground source heat potential map: potentiality is color-coded with warmer colors indicating higher heat exchange efficiency.

Drastically Increasing the Use of Renewable Power

To drastically increase the use of renewable energy, TMG has strengthened systems for buildings in Tokyo, such as the Tokyo Cap & Trade Program and Tokyo Green Building Program, to expand the use of renewable energy at buildings. In addition, we are promoting efforts to encourage the purchase of renewable power by Tokyo residents etc.

"Let's Use Natural Electricity" campaign (model project to promote group buying of renewable power by households)

TMG is committed to realizing the reduction in the price of renewable energy by recruiting prospective purchasers of renewable energy to increase purchasing power. We are conducting the "Let's Use Natural Electricity" campaign to encourage Tokyo residents etc. to purchase renewable power. It is a mechanism that allows renewable power to be used even in households where solar panels cannot be installed. We are also expanding our efforts in collaboration with local governments in the metropolitan area.



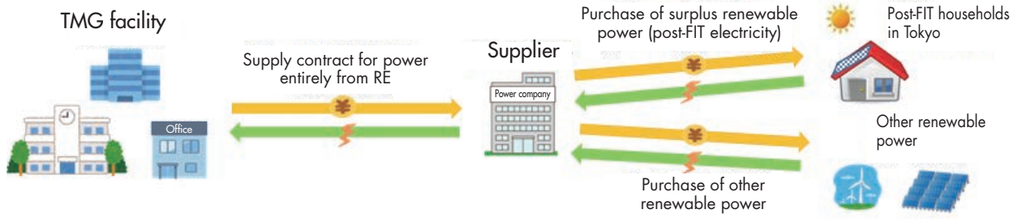
Measures for energy suppliers

To improve the environmental properties of electricity, TMG requires electricity suppliers for Tokyo to reduce CO_2 emission factors, set targets for renewable energy volume, and report the results through the Environmental Energy Reporting Program.
We provide information that helps consumers select environmentally friendly electricity.

Initiatives Taken by TMG

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.

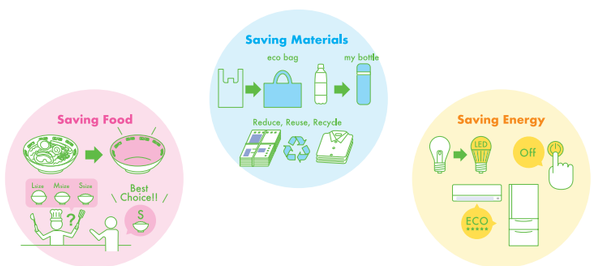
* Post-FIT refers to equipment for which the purchase period of FIT (a system for purchasing renewable power at a fixed price for a certain period started by the national government in 2012) has ended. Such equipment is expected to increase at an accelerating rate from November 2019



Recruiting Participants in Team Mottainai!

- Changes in each individual's awareness and behavior will create an environmentally friendly society.
- Team Mottainai is a loose framework to raise each individual's awareness of "mottainai" (sense of "too precious to waste" and respect for the Earth's resources) and change their consumption behavior in a variety of situations, focusing on the following three areas.
- We welcome all businesses, NGOs, and other organizations as well as individuals that support the intent behind the activities, convey awareness of "mottainai," and engage in activities to create an opportunity for behavior change.

Join Team Mottainai to expand your environmentally friendly lifestyle together with us!



チーム もったいない
Team Mottainai "too precious to waste"

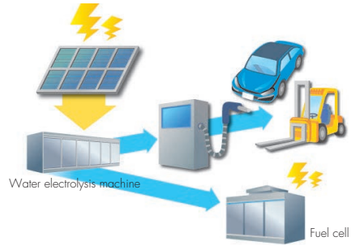
Apply from here ➡

CREATING A HYDROGEN-BASED SOCIETY

Hydrogen is a clean energy that emits only water when used, helping reduce environmental load as well as contributing to a diversified energy mix, with a spillover effect on economy and industries, and response to emergencies. When the use of hydrogen derived from renewable energy, rather than depending on fossil fuels, is made practical in the future, hydrogen-based energy will be a definitive step towards a decarbonized society. We are working toward the realization of a hydrogen-based society by providing support from various perspectives, such as institutional and financial aspects, and actively promoting the effective use of hydrogen-related technologies.

Promoting the Use of CO_2 Free Hydrogen from Renewable Energy

Since hydrogen allows energy storage in a large amount and for a long term, it is also promising as an adjusting power at the time of the massive introduction of renewable power toward the realization of a decarbonized society.
For the production and future use of CO_2-free hydrogen derived from renewable energy, TMG will encourage facilities in Tokyo to install equipment for using hydrogen derived from renewable energy and consider hydrogen supply systems that use renewable-energy-sourced power from Tohoku and other regions.



Use of CO2-free hydrogen from renewable energy (image)

Effective Use of Hydrogen Stimulated by the Tokyo 2020 Games

TMG will install hydrogen stations in the Olympic Village after the Tokyo 2020 Games to supply hydrogen to FCVs and Bus Rapid Transit (BRT). To realize the first full-scale hydrogen supply system in Japan and make it a model for achieving a hydrogen society, TMG will introduce new technologies, including hydrogen pipelines and next-generation hydrogen fuel cells.

©Designated Builder of Urban Redevelopment Project in the west Haruni 5-Choume District

Olympic Village after the Tokyo 2020 Games (image)

Education Center

At the end of July 2016, TMG opened an education center to promote the spread of information about hydrogen energy, and allow citizens and facilities in Tokyo to learn more about the significance, technologies, safety, and future of a hydrogen-based society. It also helps small and medium operators of hydrogen stations learn the skills necessary to operate their stations successfully and safely, as well as promoting facility tours at home and abroad.

Tokyo Hydrogen Museum

EXPANDING THE USE OF ZERO EMISSION VEHICLES (ZEVs)

To realize a Zero Emission Tokyo, TMG has set a goal to increase the market share of ZEV—vehicles not emitting any CO_2 or air pollutants during driving, such as EVs, PHVs and FCVs—to 50% of new passenger car sales by 2030. TMG accelerates the introduction of vehicles and infrastructure development to achieve this goal.

Promoting the Use of ZEVs

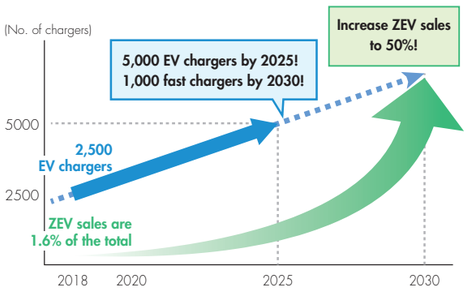
As the price difference from gasoline-powered vehicles presents an obstacle when residents and businesses in Tokyo consider the purchase of ZEVs, TMG builds on the financial support it provides along with the national government to clear obstacles to the purchase of ZEVs.
As part of an initiative toward its own sustainability, TMG is proactively introducing ZEVs by ensuring the replacement of TMG-owned vehicles with ZEVs when updating, in principle.
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 September 2020, a total of 84 fuel-cell buses have been introduced, including those operated by private businesses. The Tokyo Fire Department introduced EVs, FCVs, and EV motorcycles by FY 2018, and incorporated EV ambulances, small EVs, and EV trikes as first emergency vehicles in FY 2019. TMG will continue replacing its vehicles with ZEVs including EV motorcycles.

EV motorcycle (photo courtesy of Tokyo Fire Department)

Fuel cell bus

Promoting the Installation of EV Chargers and Hydrogen Stations

In order to eliminate users' anxiety about insufficient charging opportunities and promote the installation of EV chargers as social infrastructure, TMG promotes installation at public facilities and subsidizes installation costs at private facilities, such as multi-family residential buildings and commercial facilities. Through these efforts, TMG aims to increase the number of EV chargers installed in Tokyo to 5,000 by 2025 and increase the number of fast chargers to 1,000 by 2030.
Since the opening of the first commercial hydrogen station in Tokyo in 2014, 19 stations have started operation as of the end of August 2020.



© Iwatani Corporation

Hydrogen station

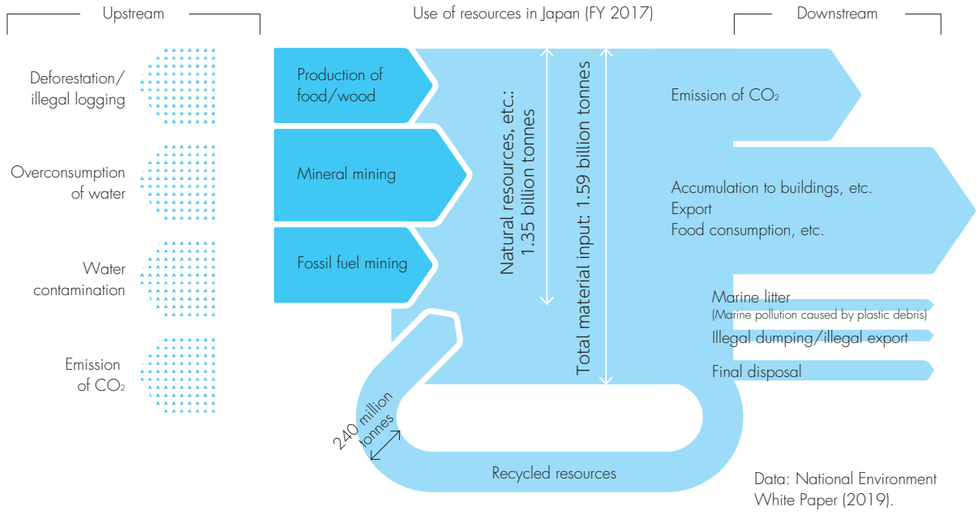
SUSTAINABLE USE OF RESOURCES

The consumption of resources is expected to increase along with the economic development of emerging countries. The Sustainable Development Goals (SDGs) adopted by the United Nations in September 2015 set forth Goal 12: Ensure sustainable consumption and production patterns.
In FY 2017 Japan consumed 1.35 billion tonnes of natural resources, almost half of which were imported. To compound the situation, these resources were not effectively recycled, with only 240 million tonnes of them being recycled.

Tokyo Has Great Influence on the Use of Resources in Japan

As Tokyo is host to approximately 40% of the head offices of corporations in Japan consuming a significant amount of resources, it has to fulfill its responsibility for reducing environmental load on a global scale.
TMG is working on a variety of initiatives to accomplish two missions by 2030, which are shown in the Sustainable Materials and Waste Management Plan (March 2016): conversion to the sustainable use of resources that promotes reduction of resource loss, use of eco materials, and further cyclic use of waste, and handing over a better city environment to future generations.

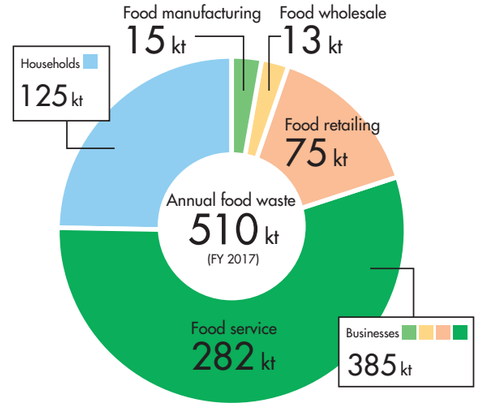
Environmental impacts in the upstream and downstream sides of resource use



Data: National Environment White Paper (2019).

Reduction of food waste

Food waste in Japan is estimated at approximately 6.12 million tonnes (2017), which is an enormous amount, 1.5 times greater than the amount of food aid provided by the United Nations, approximately 4.2 million tonnes.
Food waste in Tokyo is estimated as approximately 510,000 tonnes (2017), of which food waste from businesses accounts for approximately 75%. Aiming to halve food waste by FY 2030 compared to 2000 levels, TMG will formulate a Tokyo Food Waste Reduction Promotion Plan based on deliberations of stakeholder meetings in which we discuss ways to avoid food waste. And then in accordance with the plan, we will promote the creation of new business models that use ICT technology to help reduce food waste and the development of a matching system for emergency food stock coming close to its best-by date.



Food waste in Tokyo

Promotion of Circular Use of Waste

TMG will deal with a more sophisticated circular use of waste that contains recyclable resources.

3Rs of business waste

Commercial facilities, such as office buildings and stores, discharge not only waste paper and other organic waste but also plastic and metal waste, which are categorized as industrial waste by law and could be used as a resource through proper separation.
By identifying the actual conditions of waste discharge from office buildings, TMG will promote 3Rs of business waste by working with municipalities and dispatching 3R advisors who are familiar with the issues surrounding waste.

Waste separation at an office building

Recycling of WEEEs

The Tokyo 2020 Organising Committee conducted the Medal Project to reuse metal extracted from small WEEEs to manufacture medals awarded at the Games. In line with its aim for a more sustainable society, TMG was keen to cooperate with this project, and placed a collection box in its office building.

Sustainable Use of Plastics

With their excellent properties, such as lightness and non-corrosiveness, plastics are widely used in our lives. However, CO_2 is emitted at all stages in the handling of plastic products, from manufacturing to disposal. There are concerns that plastic products flow into the ocean and adversely affect the marine ecosystem. TMG established the Tokyo Plastic Strategy in December 2019 to lay out a clear vision of the use of plastics with net zero CO_2 and set 2030 targets for reducing the amount of incinerated plastic waste. We are promoting various initiatives to realize the sustainable use of resources.

Reduction of single-use plastics

Retailers have been required in principle to charge for plastic shopping bags since July 2020 as part of a national government initiative. However, there are many other single-use plastics around us.
TMG provides information to help reevaluate the disposable lifestyle in collaboration with businesses and universities in Tokyo.

Creation of innovations in collaboration with businesses

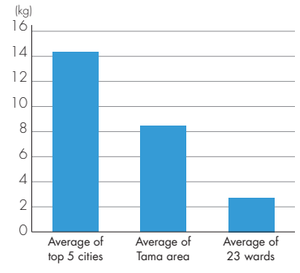
TMG supports businesses that are making pioneering efforts toward the sustainable use of plastics, such as reducing single-use plastics or promoting reuse, recycling, and the use of recycled plastics.

The Loop platform for providing products using returnable containers promotes the circular use of resources by selling, collecting, and reusing containers for daily necessities and food upon home delivery or in stores.

Expansion of separate collection of plastic containers and packaging

Most of the used plastics discharged from households are plastic containers and packaging. All municipalities separate and recycle plastic bottles, but their approaches greatly differ for other plastic containers and packaging. Some municipalities have adopted separation and recycling to deal with plastic containers and packaging, but other municipalities do not collect and separate them completely due to problems with costs or facilities.
To resolve such issues, TMG work with municipalities and strongly support their efforts to introduce and expand the separation and recycling of other plastic containers and packaging.

Amount of other plastic containers and packaging collected separately (Per capita in FY 2018)



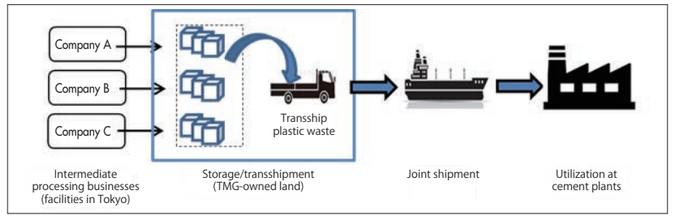
Promoting bottle-to-bottle recycling

To realize the use of plastics with net zero CO_2, closed-loop recycling is essential to restore the quality of used plastics to the same level as that of original materials in addition to ensuring extensive Reduce & Reuse.
Since bottle-to-bottle recycling, which recycles used plastic bottles as just plastic bottles, is a precursor to that approach, TMG has established a consortium with the soft drink industry to promote the circular use of plastics.

A kick-off meeting declaring the establishment of a consortium

Emergency measures to promote circular use of plastic waste in Japan

With regulations on plastic waste import tightened in Asian countries, the plastic waste processing and recycling markets in Japan have seen an increase in processing costs and inventory. Following the revision of the Basel Convention, the export of contaminated plastic waste after January 1, 2021 will require the consent of importing countries. Regulations are expected to become even more stringent in each country and it is becoming increasingly difficult for disposal businesses to ensure storage locations for plastic waste.
By effectively using plastic waste, TMG strives to ensure new resource circulation routes in cooperation with industry and businesses.



Preventing plastic waste from flowing into the ocean

It is said that each year 4.8 to 12.7 million tonnes of plastics wash into the ocean from rivers etc. around the world and the weight of plastics in the ocean will exceed that of fish by 2050. To prevent marine pollution, TMG promote the collection of marine litter and work on curbing the generation of marine litter and raising awareness of marine litter in cooperation with municipalities, NGOs, and businesses etc.

Video "Re-Think Ocean Plastics"

Marine litter is caused not only by littering on the streets, but also by litter spilling from waste collection points around the city and unintentionally scattered in our daily life.
TMG will promote environmental educationfor children in cooperation with educational institutions in order to prevent such scattering of litter and encourage a shift to a lifestyle with minimum litter.

Children surveying river litter

Other efforts for a shift toward a recycling-based society

Recycling of incinerator ash

In Tokyo, almost all unrecyclable waste is incinerated and some of the ash then recycled as raw material for Eco-Cement, etc.

Eco-Cement plant, which produces cement from incinerator ash

Eco-Cement

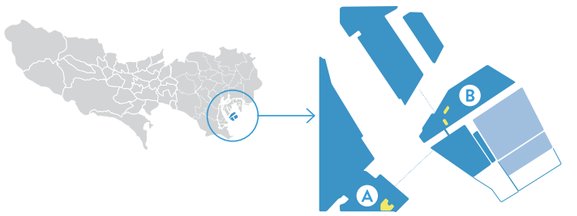
Used as construction materials

Promotion of construction byproducts recycling

The Construction Recycling Law obligates construction companies to separate materials when demolishing buildings and recycle special construction materials (concrete, asphalt concrete, wood). To give an example, concrete is recycled not only for roadbed materials but also for making new concrete aggregates.

Super Eco Town Project

TMG has implemented a Tokyo Super Eco Town Project with companies who have advanced and reliable technologies such as making animal feed from food waste, recycling construction mixed waste, and so on. The project will help extend the useful lifespan of landfill areas. The Super Eco Town is located in the waterfront area.

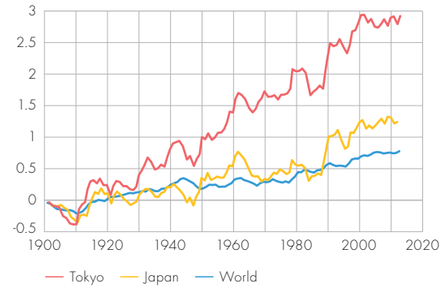


- A Construction mixed waste recycling facility (2 plants)
- A E-waste recycling facility (2 plants)
- A Facility converting food waste to feed (2 plants)
- A Facility generating biogas power from food waste (1 plant)
- A Buried waste recycling facility (2 plants)
- A Waste carpet tile recycling facility (1 plant)
- A Debris/construction sludge recycling facility (1 plant)
- B PCB waste treatment facility (1 plant)
- B Gasification and melting power plant (1 plant)

MITIGATION OF URBAN HEAT ISLAND

Urban heat island effects have continued in Tokyo as urbanization progresses. Ahead of the Tokyo 2020 Olympic and Paralympic Games, measures to reduce heat for citizens and tourists have become a critical challenge.

The daily mean maximum temperature in August, the month in which the Tokyo 2020 Games will take place, was 32.4°C from 2010 to 2014.



Changes in annual average temperature anomalies in the world, Japan, and Tokyo since 1900

Creation of Cool Spots etc.

In collaboration with business operators and municipalities ready to install fine mist generation equipment or plant more flowers and trees, TMG has been creating cool spots for heat mitigation to allow citizens and tourists to stroll comfortably during midsummer.
We are also considering the use of ICT etc. for summer heat countermeasures, by conducting, for example, demonstration measurements using smart poles in the "Smart Tokyo" preliminary implementation area (Nishi-Shinjuku).

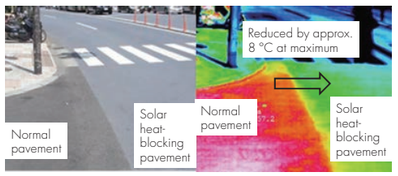
Fine mist and green walls

"Uchimizu" (Water Sprinkling)

Sprinkling water is part of the traditional Japanese culture. Sprinkling water in front of houses or stores lowers the temperature of the hot ground surface, helping mitigate the summer heat. TMG is making efforts to promote Uchimizu activities in conjunction with citizens and businesses in Tokyo.

Laying Solar Heat-Blocking Pavements, Maintenance and Management of Trees

For Tokyo metropolitan roads mainly in the central core area, TMG has laid solar heat-blocking pavements and water retaining pavements to mitigate road surface temperature rise. As one of heat countermeasures for the Tokyo 2020 Games, TMG completed approximately 145 km in total as of the end of FY 2019.
To ensure the shade of trees blocking the blaze of the sun in summer, TMG properly maintains trees along Tokyo metropolitan roads as well as those in parks, including keeping a mass of greenery through planned pruning.



Road surface cooled with solar heat-blocking pavement

Heat countermeasures for spectators along the "Last-Mile" to the venues of the Tokyo 2020 Games

At the Tokyo 2020 Games, TMG will set up temporary rest spots for spectators etc., consisting of a tent and cool air vents, along the long "last-mile" to the venues and the roadside areas of on-the-road sports events as well as distributing fan-shaped thick paper leaflets, neck coolers, etc.
We are steadily working for the success of the Tokyo 2020 Games.

Image of a temporary rest spot (Using light/heat-blocking sheets)