

WATER & TOKYO

TOKYO WATERWORKS INNOVATION PROJECT

FOR FURTHER EVOLUTION AND
PROMOTION OF TOKYO WATERWORKS,
THE WORLD'S LEADING
WATERWORKS SYSTEM

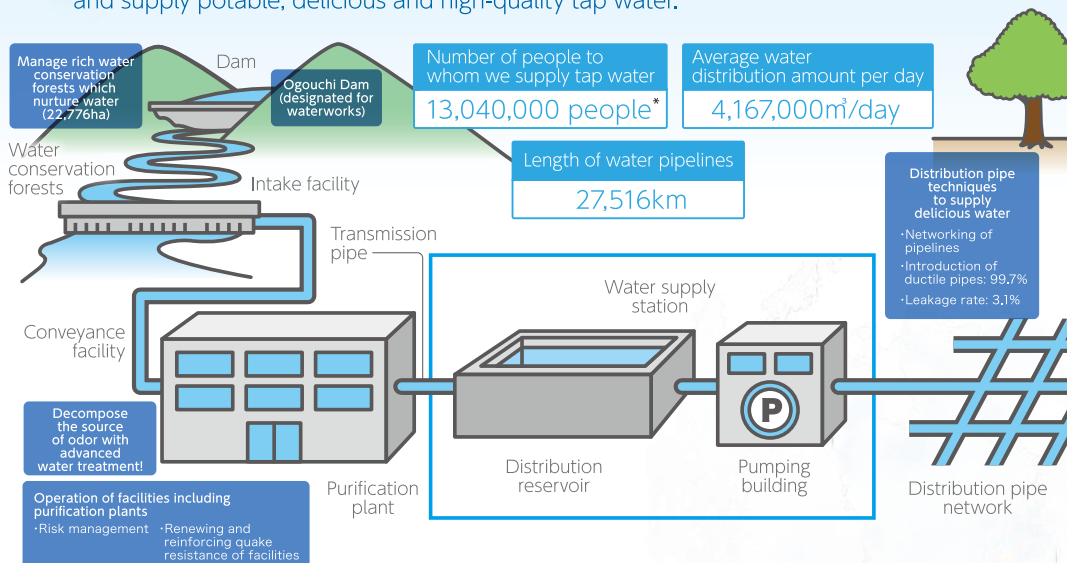


東京都水道局

Bureau of Waterworks, Tokyo Metropolitan Government

The world's leading Tokyo Waterworks system

Water for Life, Tokyo Waterworks makes various efforts to produce and supply potable, delicious and high-quality tap water.



Potable and delicious tap water to customer's satisfaction

Tasting experience Blind tasting of tap water vs. bottled water

We held the blind tasting of tap water and bottled water at events across Tokyo, including the waterworks week fair.



Bottled water
About 50%



tap water
About 50%

We had many people experience the taste and safety of tap water!



About half of participants answered "tap water tastes better".

Implemented for about 176,000 people in total since FY 2012.

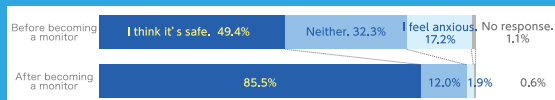
Confirm safety

Implemented water quality monitor

We had our customers use a simple kit and check by themselves the quality of tap water at home.

Their impression of the safety of tap water has improved and so has their satisfaction after they became monitors.

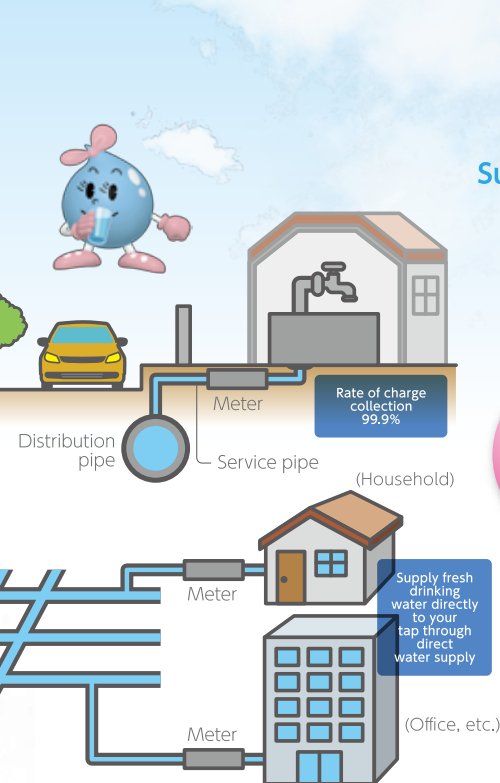
- Please tell us about "the change in the impression of safety".



- After becoming a monitor, has your satisfaction with tap water improved?



Implemented for 1,530 people in FY 2015.



Superiority
of tap
water

[High quality]
**Potable
and
delicious**

Our familiar
tap water is of
such an excellence!



Thorough water quality
management

(Constantly monitor with
automated water quality
meters at 131 locations
in Tokyo)

**Budget-
pleasing**

Tap water
costs about
0.2 yen per 1 liter

**Essential
to daily life**

Use tap water to wash
hands and gargle to prevent
infectious disease.
It's also safe to use for
cooking and bathing.

**Eco-
friendly**

Great in energy efficiency of
production/transportation
and eco-friendly

As of the end of March, 2015 *As of October 1, 2014

Tap water gaining worldwide recognition

Tap water campaigns around the world



Water-On-the-Go campaign in New York City

- In order to let people know about the merits of tap water of New York City, the city government installed water fountains where water is supplied from fire hydrants to portable taps and sinks.



O! l'expo L'eau expo

- The city of Paris exhibited information on water at the pavilion of water in the 16th arrondissement in Paris. The city also conducted a PR event to communicate a message that tap water is "eco-friendly and economical".



I see, there are
various campaigns
happening
around the world!



Toward 2018 and 2020

Our Bureau has started a project to cooperate with various actors, evolve the world's leading Tokyo Waterworks system further and promote it in Japan and overseas with an eye towards the IWA World Water Congress & Exhibition 2018, Tokyo 2020 Olympic and Paralympic Games, and the future further ahead of them.

Innovation

Evolution
+
Promotion

2016



Principal Measures

Enhancement of strength of Tokyo as an urban city / Contribution to Japan and overseas

- 1 Efforts on the model project of smart-meter introduction
- 2 Production and utilization of hydrogen
- 3 Domestic contribution utilizing leakage prevention technology
- 4 Utilization of new robotic technologies

Promotion of customers' understanding / Succession of waterworks culture

- 5 Installation of tap water station
- 6 Implementation of the model project of bottle dispenser installation
- 7 Implementation of the project of "water resource forest" created by everyone
- 8 Support for introducing misting systems for Tokyo 2020 Games
- 9 Implementation of a tour to learn and be exposed to the history and culture of waterworks
- 10 Holding of art exhibitions under the theme of water
- 11 Tokyo citizens to participate as judges in Waterworks Calendar Photo Contest
- 12 PR campaigns of waterworks business using assets

Fostering of awareness of crisis management

- 13 Support project for trainings using the material/device for emergency water supply
- 14 Implementation of water suspension experience utilizing water supply trainings

The IWA
World Water
Congress &
Exhibition 2018

2017

2018

2019

2020

Tokyo 2020
Olympic and
Paralympic
Games

I see, various
measures are to
start toward
the year
2018 and 2020!



Other principal measures: covering of purification facilities, introduction of earthquake-resistant-joint-pipes, Tokyo Tap Water Project, environmental measures, international cooperation, etc.

1 Efforts on the model project of smart-meter introduction

~ Watching over security / visualization of water volume ~

Related Bureau / Organization

Bureau of
Urban
Development

Electricity
suppliers

Gas
suppliers

Project objective

- Introduction of automated meter reading with smart meters(FY2020)
- Provision of watching and visualization services(FY2021-)

Smart meters
makes our lives
better!



Contents of the project

1 Target district

5 Harumi,
Chuo-ku, Tokyo

(reprint from the Tokyo
Metropolitan
Government's website)
Athletes' village A
model plan for housing
at the end of the Games



2 Automated meter reading with smart meter

Establish a consultative meeting with electricity suppliers
and gas suppliers (February, 2016)

Conduct meter reading using joint meter reading system
(targeted at about 6,000 houses)

Provide the watching, visualization service based on the
changes in used water volume

2 Production and utilization of hydrogen

~ Contributing to the realization of hydrogen society (empirical research) ~

Related
Bureau

Bureau of
Environment

Purification
plants will
contribute to
the hydrogen
energy society!



Project objective

- Utilization of hydrogen at the time of disaster and contribution to the realization of hydrogen society

Contents of the project (To be undertaken in FY2016)

1 Implementation site

Purification plant premises (Asaka Purification Plant)

2 Production of hydrogen

- Utilization of by-product hydrogen
- Hydrogen production using renewable energy, etc.

3 Utilization of hydrogen

Considering the use as fuels for water trucks and
emergency cars at the time of disaster,
as well as supply to hydrogen station.

Image of hydrogen production and utilization

[By ordinarily]
Supply to
hydrogen station

[An emergency]
Considering the
use as fuels
for water trucks
and emergency cars

Utilization

Hydrogen energy

By-product hydrogen
Generated
hydrogen by Water
purification plant facilities

Renewable energy etc
-Hydroelectric
power generation
-Solar power generation
-Co-gene surplus
electricity etc

Production of hydrogen

3

Domestic contribution utilizing leakage prevention technology

~ To reduce the leakage rate of domestic waterworks entities ~

Related Organization

Japan Water Works Association

Project objective

- Provide technical support for domestic waterworks entities with high leakage rate (over 20%; 236 entities), as well as those overseas, to reduce the leakage rate

I see, it cuts waste and leads to protecting precious water resources, too.



Contents of the project

1 Technical support (FY2017-)

- Accept trainees for leakage prevention
- Dispatch specialized staff

2 Transmission of information

- Distribution of booklet "Leakage Prevention in Tokyo", publication on website



Leakage investigation



Electric leakage detector

4

Utilization of new robotic technologies

~ Demonstrating new ways to utilize them in the field of waterworks ~

Related Organization

Developing and Manufacturing companies

Project objective

- Improvement in mobility in the maintenance and management of waterworks facilities where inspections by man are difficult to be carried out

The new technology will make smoother waterworks management and check possible!



Contents of the project (To be tested in FY2017)

- Implementation of verification for using a new robot technology(drones, underwater robots, etc.) for inspections on dam bodies of reservoirs, water pipe bridges, etc.



Reservoir



Water Pipe Bridge

5

Installation of tap water station

~ Transmit potable and secure Tokyo tap water to the world ~

It's a place to promote the best waterworks system in the world!

Related Bureau

Bureau of Tokyo 2020 Olympic and Paralympic Games Preparation



Project objective

- Triggered by the IWA World Congress and Tokyo 2020 Games, install tap water station (opportunities for experience of drinking water and transmission of information)

Contents of the project

1

Installation facilities

Tone River system



Tokyo Big Sight (scheduled in FY2018)

Tama River system



Musashino Forest Sport Centre (scheduled in FY2019)

2

Implementation of Tokyo resident applicant invitation (start taking applications in May, 2016)

Widely seek submissions for design concepts, transmission methods, etc.

Prepare for taking applications (February, 2016)



Tokyo Big Sight



Musashino Forest Sport Centre

6

Implementation of the model project of bottle dispenser installation

~ Easily take around Tokyo tap water in personal bottle ~

I'll go fill my own bottle, too!

Related Organization

Metropolitan facilities



Project objective

- Fostering of pro-environmental behavior through drinking tap water

Contents of the project

- Install bottle dispensers at metropolitan facilities as a place to supply Tokyo tap water in personal bottles

1

Target facilities

Facilities of the Bureau of Waterworks (FY2016)

Other metropolitan facilities (FY2017-)

2

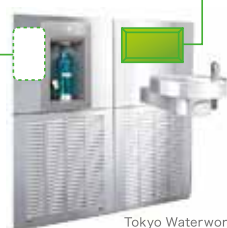
Outline

Install description panels, display counters, etc.

Subsidize the installation cost

Display counters
Display numeric data of utilization
An example of display
You are the ○○th user
○○○ at this moment (in time)

Description panels
Explanation for Model works



Tokyo Waterworks-style bottle dispenser (Image)

7

Implementation of the project of "water resource forest" created by everyone

~ Potable delicious water is produced from rich forest ~

Related Bureau

Bureau of Environment

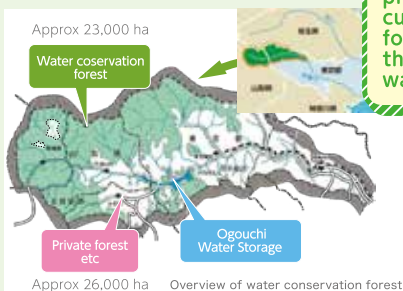
Bureau of Industrial and Labor Affairs

Project objective

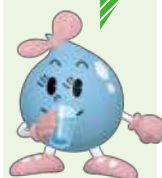
- Further promotion of forest preservation in the upstream area of Tama River to secure better water resource for waterworks

Contents of the project

- Active purchase of private forest which is anticipated to affect Ogouchi Reservoir (FY2016-)
- Forest preservation activities including tree thinning and pruning through agreements with companies, groups, etc. (to be tested in FY2017)
- Steadily implement Tama River Water Resources Forest Team activities (continuous implementation)



I see, it's important to protect and cultivate those forests to make them become our water resources!



Water conservation forest (owned by the bureau)

Management by Bureau of Waterworks

- Active Purchase
- Conservation in collaboration with companies, etc. (new)

Private forest

Forest preservation by Tama River Water Resources Forest Team (continuously)

Purchase

8

Support for introducing misting systems for Tokyo 2020 Games

~ Provision of summerizing and coolness ~

Related Bureau

Bureau of Environment

Project objective

- Provision of summerizing and coolness for Tokyo 2020 Games

Contents of the project (FY2016)

- Support businesses that are introducing drying-type misting systems

- 1 Technical support
- 2 Reduction/exemption of water charge
- 3 Experience-based events



It also prevents heatstroke!



[Examples of summerizing]

- Heat shield and water-retentive pavement
- Appropriate maintenance and management of trees
- Heat stroke prevention
- Support for introducing drying-type misting systems

9

Implementation of a tour to learn and be exposed to the history and culture of waterworks

~ A bus tour of Tokyo Waterworks facilities ~

Related Bureau

Bureau of Industrial and Labor Affairs

Bureau of Transportation

Project objective

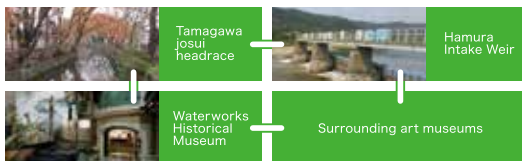
- Triggered by the IWA World Congress and Tokyo 2020 Games, create an opportunity to be exposed to the history and culture of waterworks by a tour

Let's explore the history of waterworks that dates back to Edo Era!



Contents of the project

- Implement a bus tour to waterworks facilities including Tamagawajosui headrace and surrounding art museums (summer FY2016-)
- Conduct a questionnaire survey on facilities, etc which people want to visit (Ask for responses in February, 2016)



10

Holding of art exhibitions under the theme of water

~ Collaborative events with art museums ~

Related Organization

Art Museums (around Tama River)

Project objective

- For the IWA World Water Congress, increase opportunities to reaffirm the importance of water, through art exhibition.

What kinds of paintings will be there? I'm excited!



Contents of the project

- Hold art exhibitions about water in cooperation with art museums around Tama River (FY2016-)
- Holding of workshops, lectures, etc. by researchers, curators and officials of the Bureau of Waterworks
- Setting the cooperative art museums for the courses of waterworks bus tours

Fuchu Art Museum



11

Tokyo citizens to participate as judges in Waterworks Calendar Photo Contest

Related
Organization

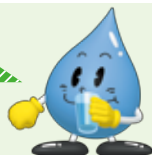
Metropolitan
Facilities,
etc.

~ Select seasonal photos of water resources and waterworks facilities and make them into a calendar ~

Project objective

- To heighten the momentum toward the IWA World Water Congress, Tokyo citizens will be invited to join as judges in the Waterworks Calendar Photo Contest.

I want to participate in the judging process, too!



Contents of the project

- Tokyo citizens will judge the entrees by voting through the Internet as well as direct votes at PR hall of the Waterworks Historical Museum and other locations (FY 2018).
- Prize-winning photographs will be displayed at facilities run by the Tokyo Metropolitan Government (FY 2016-2017)



Examples of past prize-winning photographs

12

PR campaigns of waterworks business using assets

Related
Organization

Building
management
companies,
etc.

~ To let more people know about the waterworks business ~

Project objective

- In order for people to **understand waterworks business better**, we conduct PR campaigns regarding waterworks business using the Bureau's assets effectively.

We can learn a lot about waterworks in Tokyo!



Contents of the project (FY2016-)

- PR campaigns of waterworks business by digital signage
- Installation of direction boards for emergency water supply stations (water supply points)



Rental buildings (digital signage)
(Image of the enforcement)



Sites for parking (direction board)
(Image of the enforcement)

13

Support project for trainings using the material/device for emergency water supply

～ Support municipalities through collaboration with the fire department ～

Related
Organization

Tokyo Fire
Department

Project objective

- Improvement in the disaster response capacities (emergency water supply/initial fire extinguishing) of municipalities and local residents



We also support training programs so that they can respond to emergencies!

Contents of the project (to be tested in FY2016)

- Establishment of a support system in collaboration with the Tokyo Fire Department
- Upon request from municipalities, support trainings using fire hydrants, etc. in and around evacuation centers



Firefighting training



Emergency water supply training

14

Implementation of water suspension experience utilizing water supply trainings

～ To reaffirm the importance of waterworks ～

Related
Bureau

Office of
Education

Project objective

- To experience the situation in which waterworks cannot be used and reaffirm the importance of waterworks



What if we can no longer use tap water? It's an emergency drill to let everyone experience the simulated scenario!

Contents of the project (to be tested in FY2016)

- Target** | Disaster drills carried out in metropolitan high schools, town assemblies, housing complexes, etc.
- Contents of implementation**
 - Simulated water suspension experience
 - Emergency water supply (stand pipe)
 - Transportation using water supply bags, etc.



Emergency water supply and transporting experience using water supply bags



Memorandum



Covering of Purification Facilities

Purification plants in Tokyo have been done measures against contamination with foreign substances especially at filter basin. But it is concerned about harmful effect on functions of purification in case of occurrences of ash fall by volcanic eruption, terrorist attacks, etc. because basins (e.g. sedimentation basin) with those water surface being exposed to the atmosphere exist. Even in those cases, in order to maintain functions of purification plants, we will cover purification facilities in accordance with the renewal of purification plants.



Image of covered purification plant

Introduction of Earthquake-Resistant-Joint-Pipes

In order to minimize water stoppage damage at the time of earthquake disaster and secure water supply as much as possible, we are working to replace pipes with earthquake-resistant ones which prevent themselves from coming off. In implementing that, taking into account the Great East Japan Earthquake and the metropolitan government's estimates of expected damage, etc. we are prioritizing the supply route to important facilities including the capital's central agencies, emergency medical institutions and evacuation centers, and those areas where heavier damage is anticipated.



Earthquake-resistant-joint-pipes suspension demonstration



So many different measures
are carried out!



Tokyo Tap Water Project

Tokyo Waterworks has introduced the advanced water treatment at every purification plant in the Tone River system and realized the mechanism to produce high-quality tap water. We will continue to “produce and supply” potable delicious water and, being aware of “conveying and communicating”, promote the merits of tap water to customers in easy-to-understand manner.



Environmental Measures

In order to reduce the environmental burdens associated with waterworks business while securing the stable water supply for customers, we work on improvement in energy efficiency, conservation of sound water environment, efficient use of resources, etc.



Water conservation forest



Solar power generation

International Cooperation

Currently, in urban areas in developing countries, water shortage and pollution associated with rapid economic development and population increase have become obvious. As part of Tokyo Metropolitan Government's city diplomacy, we continue to contribute to the improvement of circumstances surrounding water supply in developing countries, taking advantage of its practical technologies and service operating capabilities that have been accumulated in its own experience.



Technical cooperation in foreign countries



Learn more about water!



東京都水道歴史館 TOKYO WATERWORKS HISTORICAL MUSEUM



You can explore over 400-year history of waterworks and waterworks-related materials.

東京都水の科学館 TOKYO WATER SCIENCE MUSEUM



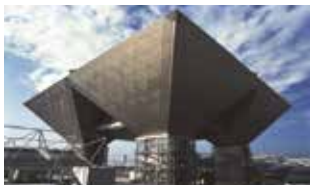
An experience-based museum where you can learn the wonder and importance of water from a scientific viewpoint.

奥多摩 水と緑のふれあい館 Okutama Mizu-to-Midori-no-Fureaikan



Introduces Okutama's abundant nature, the mechanism of dams, importance of water, etc.

IWA 2018年 the international water association IWA世界会議・展示会 The IWA World Water Congress & Exhibition 2018

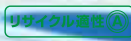


Tokyo will be the first in Japan to hold the IWA World Water Congress and Exhibition!
(Venue: Tokyo Big Sight)

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General Affairs Division, Bureau of Waterworks, Tokyo Metropolitan Government
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当紙はリサイクル率70%以上を達成しています



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