東京大学
THE UNIVERSITY OF TOKYO

環境報告書

ENVIRONMENTAL REPORT 2023

[DIGEST VERSION IN ENGLISH]

国立大学法人　東京大学
THE UNIVERSITY OF TOKYO

Chapter 1

Top Message

Introduction by the President

Sustainability and GX being promoted based on the UTokyo Compass

Modern society has reached a watershed where if it remains within its existing framework, it risks becoming dysfunctional owing to global crises, such as climate change, poverty, and social divisions, as well as once unimaginable scientific and technological innovations, including the development of generative AI. Universities must be aware of the role that academia should play, and while considering what we can do and translating it into immediate action, we must also take a long-term view embracing both the past and the future as we strive to create a new society.

The University of Tokyo announced a set of its guiding principles titled "UTokyo Compass" in September 2021. In the UTokyo Compass, we set goals from the threefold perspective of "knowledge", "people", and "place", and are steadily advancing concrete action plans to realize the goals. Green Transformation (GX) is positioned as one of the action plans.

Since 2008, the University of Tokyo has been promoting the Todai Sustainable Campus Project (TSCP) and has been working to build a low-carbon campus through various energy-saving measures. In October 2021, several months after I took the office of the President in April, the University of Tokyo became the first Japanese national university to participate in the international campaign "Race to Zero", which aims to achieve carbon neutrality (net zero greenhouse gas emissions) under the United Nations Framework Convention on Climate Change. To demonstrate our commitment to this campaign, we formulated the UTokyo Climate Action (CA), a roadmap and action plan for achieving carbon neutrality in October 2022, and we are continuing to build a foundation for students, faculty, and staff to work together to strengthen the University of Tokyo's own sustainability efforts.

As a comprehensive university that serves the global public, we are responsible for addressing a variety of issues related to GX through research, education, and university management. Not everyone on the planet can live with sustainability as their first priority and each individual faces various challenges to their well-being. This means that social change is essential for the promotion of GX. In the process, we must simultaneously find solutions to social problems, such as discrimination, divisions, and disparity, in order to build an equitable world. To this end, it is important for experts in diverse fields transcending the traditional confines of the arts and sciences to bring their knowledge to the table and engage in dialogue to create a future while building consensus. The strength of the University of Tokyo lies in its ability to bring together such diverse knowledge across generations. The University of Tokyo aims to become a driving force for global GX by engaging in extensive dialogue and collaboration with industry, local governments, and citizens.

We must conduct research that is rooted in academic freedom and quest for truth, and provide education to nurture people who have a global perspective, strong ethics, tenacity, and practical skills. At the same time, our activities to seek solutions to social problems must be conscious of the environment, health, and safety.

This report shows data on the environmental impact of the University of Tokyo and the various initiatives being taken to promote environmental consciousness, sustainability, and GX. It also introduces our efforts in the areas of environment, safety, and health management. We hope that you will read this report to gain an understanding of the various environmental activities of the University of Tokyo.

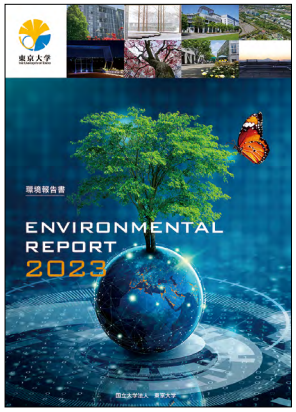
Teruo Fujii, President of the University of Tokyo

藤井輝夫

CONTENTS

Words on the Cover

"The Challenge of Building a New Society - 3"



For three years, since FY2021, this publication has addressed the theme of "The Challenge of Building a New Society". The bud drawn by CG that appeared in the FY2021 design evolved into a more realistic-looking sprout in the FY2022 design. The current FY2023 edition, which presents a theme summary, represents the coexistence of the digital and real by combining a CG illustration of the earth with an actual photographic image of a tree as the mature manifestation of the sprout. The butterfly adds color as a symbol of new life and hope for the future, representing harmony and prosperity in the new society. At a time when lifestyles and social structures are rapidly changing, we have an important role to play in capturing these movements from the front lines of educational and research institutions. We will continue to address the challenge of building the new society by confronting major challenges, such as Digital Transformation (DX) and Green Transformation (GX).

Chapter 2

Editorial Policy

Reporting Scope

(1) Articles, topics, and data on health, safety, and society:
The University of Tokyo as a whole
(2) Data on environmental impact:
The University of Tokyo as a whole
(Data from six campuses – Hongo, Komaba I, Komaba II, Kashiwa I, Kashiwa II, and Shirokanedai – are used for waste data.)

Reporting Period

(1) Articles, topics, etc.:
FY2022 (April 2022 to March 2023)
(2) Data on environmental impact, health, safety, and society:
FY2022 (April 2022 to March 2023)
The graph shows five years' worth of data for comparison.
(The dates of articles published outside the specified period are clearly indicated in each instance.)

Editorial Policy (Approach to Preparation of Environmental Report 2023)

This report not only presents data on the environmental impact of the University of Tokyo but also introduces the various initiatives that are being taken out of concern for the environment, sustainability, and the promotion of GX (Green Transformation), as well as efforts in environment, safety, and health management.
Starting this year, the report is being published in PDF format only. If you click on the URL in the report, you can directly view the details of the article and the websites of the affiliated laboratories, so please be sure to utilize this feature. You can use a search engine to search for "The University of Tokyo Environmental Report" or view it on the Environmental Report page on the University of Tokyo's official website.

https://www.u-tokyo.ac.jp/ja/about/actions/public05.html Guidelines: Ministry of the Environment's Environmental Reporting Guidelines (2018 Edition)

About the Questionnaire

You will find the questionnaire form on the Environmental Report page on the official website of the University of Tokyo. Please send the form by fax or complete the form online. We hope that you will continue to share your valuable comments with us.

URL for The University of Tokyo Environmental Report (on the official website of the University of Tokyo)	https://www.u-tokyo.ac.jp/ja/about/actions/public05.html

About the University of Tokyo Environmental Report Working Group

The purpose of the University of Tokyo Environmental Report Working Group is as follows: (1) decide upon editorial policy (2) specify content and disclosure items (3) select articles that introduce the university's education and research (4) decide upon design, and (5) conduct final review and make final decisions. The Working Group is composed of faculty members representing each faculty/graduate school/research institute, members of the Division for Environment, Health and Safety, staff of the Environmental Group of the Facilities Department, staff of the Facilities Group of the Facilities Department (Todai Sustainable Campus Project: TSCP), staff of the GX Promotion Group of the Management Planning Department, and others. The contents of the articles were discussed at the Working Group meeting held on May 17.

The cover design, etc. was discussed by the Online WG.

Working Group Members

Ritsu Dobashi (Head of WG, Division for Environment, Health and Safety), **Takeshi Iimoto** (Division for Environment, Health and Safety), **Masahiro Okura** (Division for Environment, Health and Safety), **Takashi Tamura** (Graduate School of Arts and Sciences), **Kentaro Homma** (Institute of Industrial Science), **Kazuo Tatebayashi** (Institute of Medical Science), **Ei Bannai** (University Hospital), **Hideaki Sakaue** (University Hospital), **Michiya Fujita** (Graduate School of Frontier Sciences), **Hiromi Takiguchi** (Graduate School of Engineering and Graduate School of Information Science & Technology), **Ryuta Koyama** (Graduate School of Pharmaceutical Sciences), **Masataka Furusho** (Graduate School of Humanities and Sociology), **Teppei Nunoura** (Environmental Science Center), **Futoshi Nagano** (Environmental Group), **Kenji Onoma** (Environmental Group), **Yusuke Akimoto** (TSCP), **Masashi Tsuchiya** (TSCP), **Kazushi Nobuhara** (GX Promotion Group), **Yu Sato** (GX Promotion Group), **Yoshiyuki Ieda** (Environmental Safety Group), **Hiroaki Tsukada** (Environmental Safety Group), **Fumie Ogawa** (Environmental Safety Group)

Environmental Philosophy and Basic Environmental Policy of the University of Tokyo

The University of Tokyo Charter states that the University of Tokyo will contribute to the coexistence of humanity and nature, the creation of a safe environment, the balanced and sustainable development of various regions, the advancement of science and technology, and the critical inheritance and creation of culture through its education and research. Based on this, the University of Tokyo has established the following "Environmental Philosophy of the University of Tokyo" and "Basic Environmental Policy of the University of Tokyo" in order to clarify specific environmental initiatives.

Environmental Philosophy of the University of Tokyo

Since the beginning of the 21st century, there has been an even stronger demand for society to transform itself from a wasteful system with mass production, mass consumption, and mass disposal of resources to a recycling system that supports sustainable development. In accordance with this major trend and the University of Tokyo Charter, the University of Tokyo, as a world-leading university, is nurturing human resources capable of responding to the demands of society with accumulated knowledge and a global perspective, and is contributing to the formation of a recycling-oriented society through active cooperation with external entities. In this way, we are returning to society the fruits of the education and research achieved through the resources entrusted to us by the Japanese people and society. We disclose the full details of the University of Tokyo's environmental conservation activities and research activities for environmental improvement, and we aim to build an environmentally friendly campus. In addition, the University seeks to actively transform itself by exposing itself to evaluation by society as an "open university" and will continue to contribute to the creation and global exchange of science, knowledge and culture related to environmental improvement, as well as to the sustainable development of society. To achieve these goals, we continuously conduct our activities in accordance with the Basic Environmental Policy of the University of Tokyo.

Basic Environmental Policy of the University of Tokyo

Education and Research

1. The University of Tokyo shall integrate educational and research activities that leverage its characteristics as a comprehensive university to contribute to the advancement of science and technology related to the environment, and contribute to the development of an environmentally friendly culture.

Social Responsibility of the University

2. All members of the University of Tokyo shall comply with the environmental laws and regulations applicable to university administration and the standards established by the university. They shall also endeavor to prevent environmental pollution caused by research activities.

Reduction of Environmental Impact

3. The University of Tokyo shall aim to reduce the environmental impact of running the University and conducting educational and research activities, strive to conserve resources and energy, and pursue sustainability and the improvement of activities by making the most effective use of the resources entrusted to us by the Japanese people and society.

Sustainable Development of Global Society

4. The University of Tokyo shall contribute to the sustainable development of global society by actively engaging in research in collaboration with other universities and research institutes in Japan and overseas.

Local Environmental Conservation

5. The University of Tokyo, as a member of the local community, shall contribute to the preservation of the local environment by conducting University operations in an environmentally friendly manner.

Self-Improvement

6. The University of Tokyo shall establish environmental objectives and targets for achieving its environmental policy and conduct environmental conservation activities with continuous reviews and improvement measures.

Disclosure of Information

7. The University of Tokyo shall self-inspect activities that affect the environment and disclose environmental information to the University community and the greater public.

Chapter 3

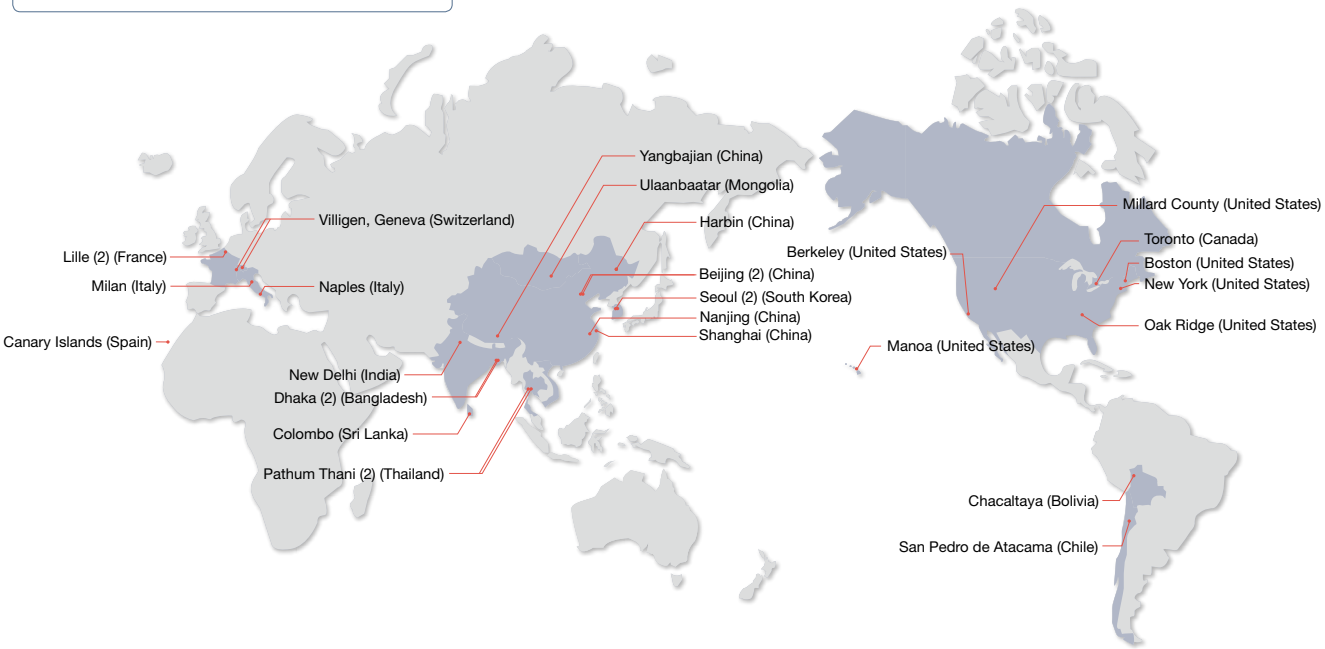
Overview of the University of Tokyo

01 Distribution of the University of Tokyo's Offices and Facilities

The University of Tokyo is comprised of 10 faculties, 15 graduate schools, 11 affiliated research institutes, five University Joint Education and Research Institutes, four Institutes for Advanced Study, five Interdisciplinary Research Institutes, three National Joint-Use Institutes, and 44 Collaborative Research Organizations, as well as many facilities attached to faculties, graduate schools, and affiliated research institutes, such as the University Hospital and libraries. The University of Tokyo's facilities are widely distributed throughout Japan and overseas.

https://www.u-tokyo.ac.jp/ja/intl-activities/overseas-offices/list_of_overseas_offices.html

Distribution of Overseas Offices



General Overview

Founded ●April 12, 1877
History ●http://www.u-tokyo.ac.jp/gen03/b03_01_j.html
Members ●8,214 (directors, academic and administrative staff)

Number of facilities ●51 facilities
Site area ●325,991,256 m²
Total floor area of buildings ●1,829,243 m²

Directors, academic and administrative staff

	Male	Female
Directors, etc.	17	5
Academic and administrative staff	4,876	3,316
Subtotal	4,893	3,321

Total 8,214

Faculties

	Male	Female
Undergraduate students	11,044	2,930
Undergraduate researchers	16	5
Undergraduate auditors	41	1
Subtotal	11,101	2,936

International students	Male	Female
Undergraduate students	171	123
Undergraduate researchers	0	1
Undergraduate auditors	1	0
Subtotal	172	124

Total 14,037

Graduate schools

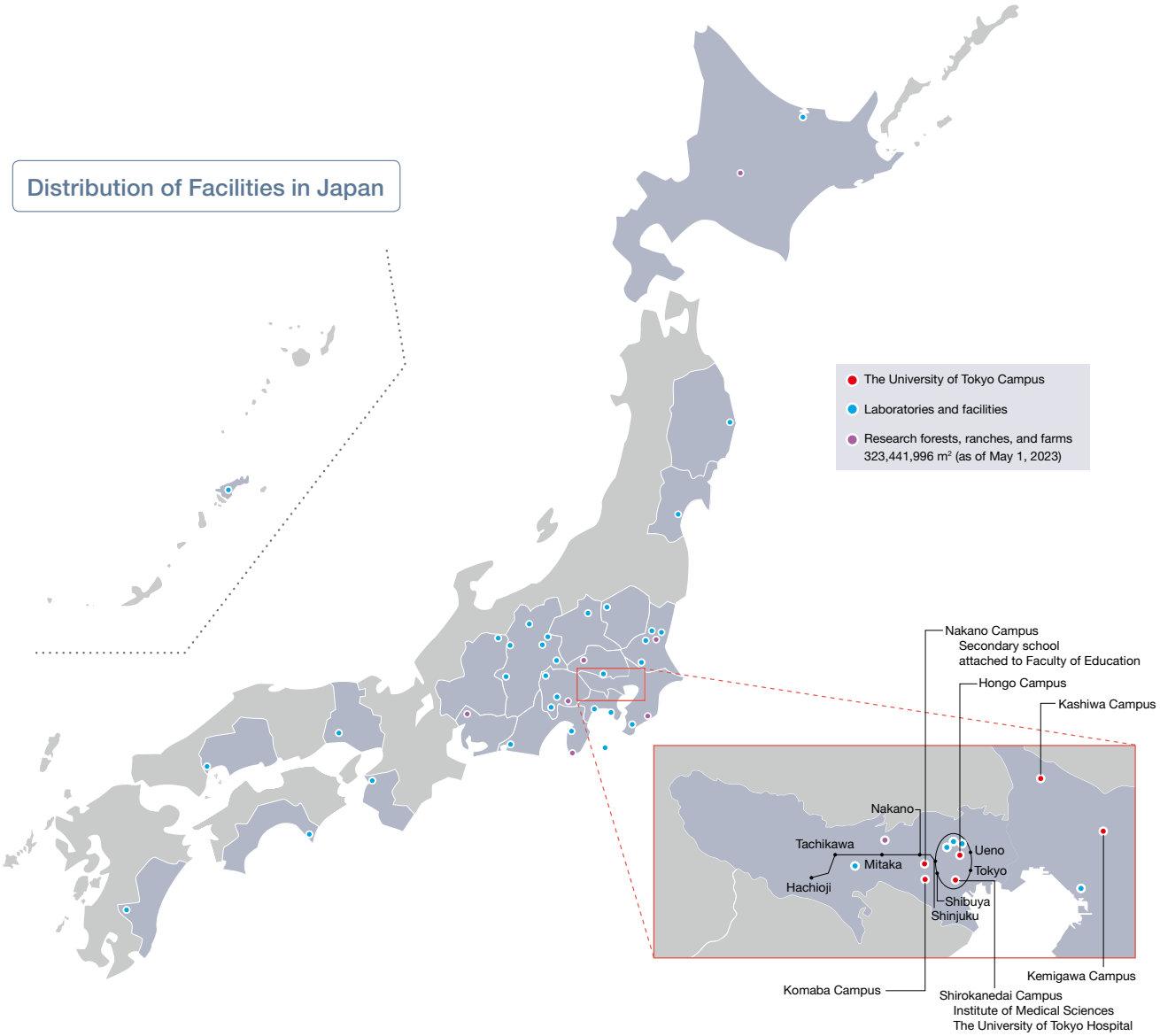
	Male	Female
Master's degree	5,302	1,786
Professional degree	488	362
Doctoral degree	4,442	1,864
Graduate researchers, etc.	292	244
Subtotal	10,524	4,256

International students	Male	Female
Master's degree	1,090	701
Professional degree	57	87
Doctoral degree	1,268	760
Graduate researchers, etc.	234	226
Subtotal	2,649	1,774

Total 14,780

(As of May 1, 2023)

Distribution of Facilities in Japan



Three Main Campuses of the University of Tokyo

Hongo Campus

The Hongo Campus, with iconic scenery that symbolizes the University of Tokyo, such as the Red Gate, Yasuda Auditorium, the Avenue of Ginkgo Trees, and Sanshiro Pond, is home to many National Important Cultural Properties and Registered Tangible Cultural Properties. In addition to preserving the historical environment represented by this landscape as a valuable one, the Hongo Campus is striving to create an environment suitable for assuming a central role in education and research from the Senior Division of the undergraduate level faculties (specialized courses) through to the graduate schools. The Hongo Campus includes facilities in Hongo, Asano, and Yayoi Areas, as well as the University of Tokyo Hospital.

Photo by Yuji Ozeki

Komaba Campus

Komaba I

This campus houses the Junior Division of the College of Arts and Sciences program (1st and 2nd years), the Senior Division of the College of Arts and Sciences program (3rd and 4th years), the Graduate School of Arts and Sciences, and the Graduate School of Mathematical Sciences. The leafy campus is filled with educational and research buildings. Many buildings of historical value remain, including the Komaba Museum, which is open to the public, and Classroom No. 900, which was designed as companion to the Komaba Museum. Since all students who enter the University of Tokyo spend the first half of their undergraduate career at the College of Arts and Sciences, it also serves as a base for students' circle activities.

Komaba II

The Institute of Industrial Science and the Research Center for Advanced Science and Technology support the most advanced academic research in these fields and graduate education in the research process.

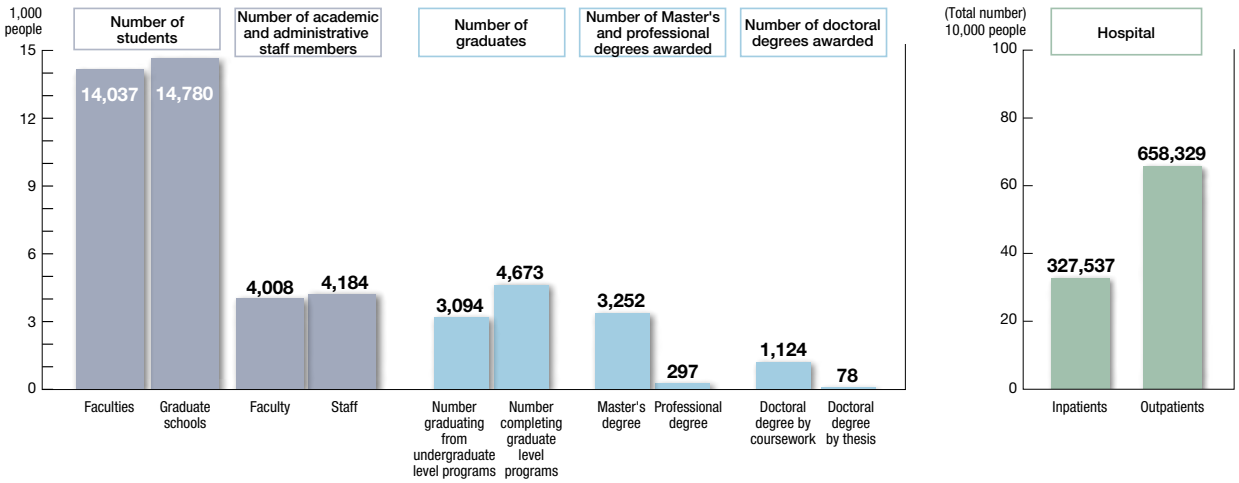
Kashiwa Campus

The Kashiwa Campus together with the Hongo Campus and Komaba Campus comprises the three main campuses of the University of Tokyo. In the spirit of academic integration, the main Kashiwa Campus, the Kashiwa II Campus, and the Kashiwa-no-ha Station Campus work together to realize the three prongs of the University of Tokyo's philosophy of education and research: "promoting world-leading research and the creation of new academic fields", "international collaboration between students and local residents and the formation of distinguished international education and research centers", and "social implementation of university research through the promotion of regional collaboration and social collaboration".

Chapter 3

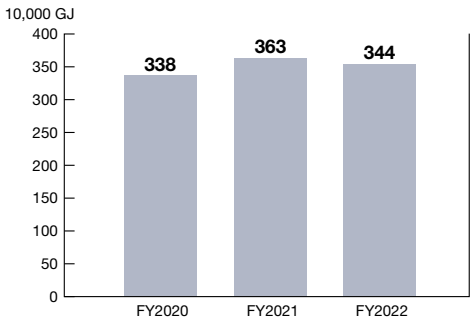
Overview of the University of Tokyo

02 Overall Picture of the University's Activities and Environmental Impact

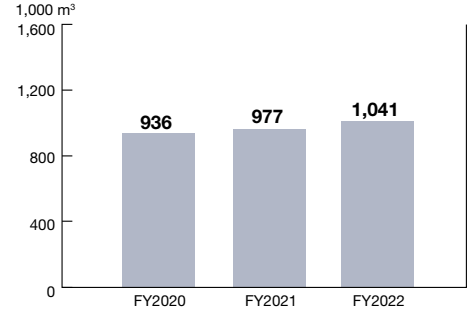


▶INPUT

Energy consumption

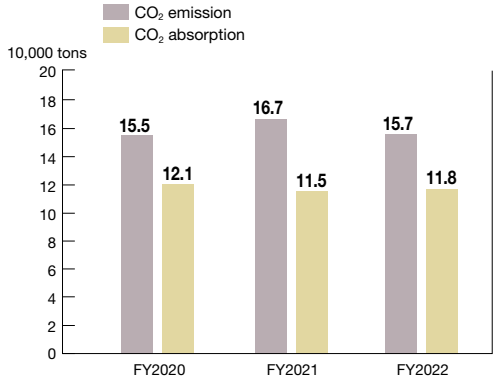


Water resource consumption



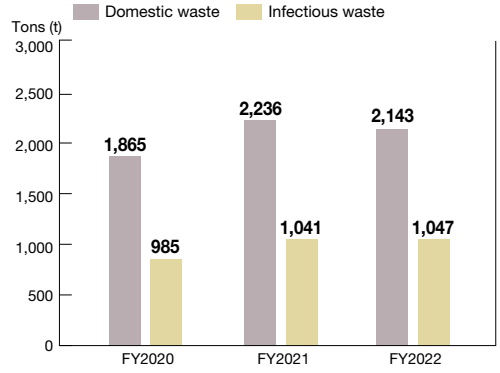
OUTPUT▶

CO_2 emission and absorption by trees in the University of Tokyo Forests



*The CO_2 absorption is calculated by the University of Tokyo Forests (Forest Management Committee).

Domestic waste and infectious waste



03 University-Wide Environmental Safety Management System

System introduction

http://kankyoanzen.adm.u-tokyo.ac.jp/org/org.html

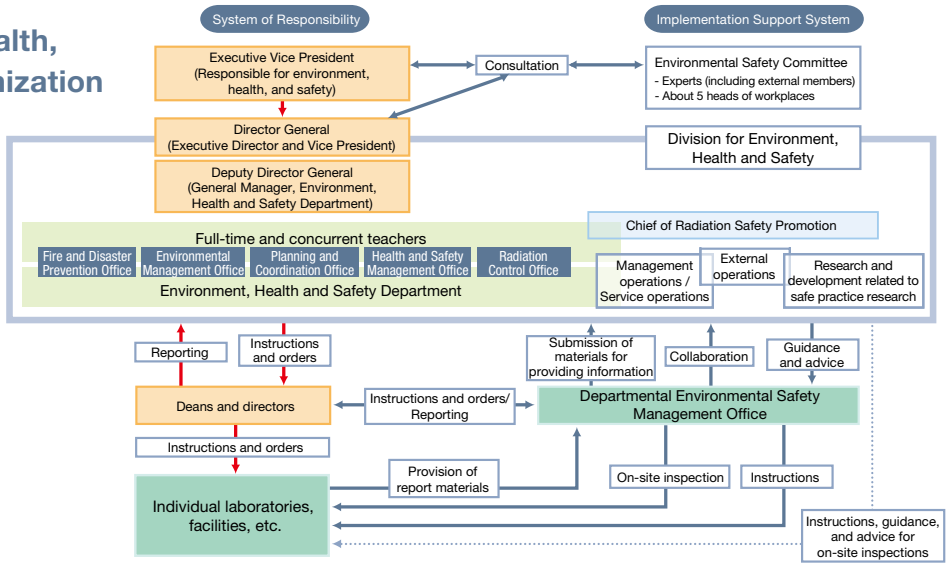
In order to ensure environmental safety and health on campus, the University of Tokyo has established the Division for Environment, Health and Safety in its head office along with the Environmental Safety Management Offices in its faculties/graduate schools/research institutes. Academic and administrative staff work together to solve a wide range of problems while strictly complying with laws and regulations, enhancing safety education, preventing the recurrence of accidents and disasters, managing chemical substances, utilizing safety and health systems, and conducting patrols by industrial physicians. With the aim of creating a safe and secure environment for education and research, the Division for Environment, Health and Safety is working as one to further enhance environmental safety and health in cooperation with all university organizations and faculties/graduate schools/research institutes, including the Environmental Science Center, the Isotope Science Center, the Cryogenic Research Center, the Office for Life Science Research Ethics and Safety, and the Health Service Center.

Notable initiatives and other items in FY2022 include the following: In the area of chemical substance management, we have begun to review our chemical substance management methods in conjunction with the revision of the Ordinance for Enforcement of the Industrial Safety and Health Act. At the same time, the University of Tokyo Chemical Information Management System (UTCIMS), which is operated independently by the University, was used to conduct a comprehensive inventory of chemical substances and strengthen the management of chemical substances in the university's possession.

In addition, with the aim of developing and expanding our fire prevention and disaster prevention systems, we formulated the "Fire Safety Manual 2023", which mainly outlines how to conduct fire risk assessments to prevent fires from occurring and how to respond to fires. Furthermore, we revised the standards for establishing a disaster response headquarters in order to implement smooth emergency measures in the event that a disaster occurs at night or on weekends or holidays.

It takes time for a culture of safety to take root at universities, where there is a floating population and progressive internationalization. Nevertheless, we are steadily promoting the development and strengthening of this system, basing our efforts in part on past examples. We will continue striving to improve the environmental health and safety of the University and to ensure the safety of our students, academic and administrative staff, as well as local residents.

Environment, Health, and Safety Organization



04 Targets Set for FY2022 and Status of Achievement

Item	Targets set for FY2022	Status of achievement	Future initiatives
Reduction of CO_2 emission	Continuously reduce total emissions under the TSCP Plan.	Reduced by 13.3% compared to FY2017.	As an interim target for TSCP 2030, CO_2 emissions will be reduced by 18% by the end of FY2023 (TSCP 2023) compared to FY2017, taking into account achievement of the target set in the Paris Agreement.
Chemical substance management	Strengthen chemical substance management, using chemical substance and high-pressure gas management systems.	A comprehensive inventory of chemical substances was conducted using a chemical substance and high-pressure gas management system, and all members were instructed to implement thorough inventory management.	Development of a new chemical substance management system in line with the revision of the Ordinance for Enforcement of the Industrial Safety and Health Act, etc.
Fire prevention and disaster prevention	Development of disaster management systems for fire prevention and disaster prevention, etc.	The "Fire Safety Manual 2023" was drawn up to prevent the recurrence of fires and to strengthen the response in case of a fire. The standards for establishing a disaster response headquarters have been revised so that a disaster response headquarters can be established as soon as possible even if a disaster occurs at night or on a weekend or holiday.	Continued development and expansion of disaster response systems under various envisioned circumstances.

Chapter 4

Responsibilities and Roles of the University of Tokyo

The University of Tokyo Guidelines for Action

UTokyo Compass

UTokyo Compass is a statement of the guiding principles of the University of Tokyo, of the ideals to which our university should aspire and the direction it should take, under the title “Into a Sea of Diversity: Creating the Future through Dialogue.” It was formulated under Teruo Fujii, the 31st president, and announced in September 2021. The name UTokyo Compass implies that it will mark the course for the University of Tokyo as it embarks on a new voyage under the leadership of President Fujii, a researcher of oceanographic engineering.

In order to realize a university that values creativity, diversity, and inclusion achieved through dialogue and is a place that anyone in the world would want to join, the Basic Policy establishes 20 goals and a concrete action plan for achieving those goals from the standpoint of "establishing management capacity" for autonomous and creative activities, and from the threefold perspective of "knowledge", "people", and "place". As a university that serves the global public through the creation of a virtuous cycle, the University of Tokyo is committed to creating academic knowledge in the pursuit, nurturing diverse and talented individuals and solving a variety of global issues facing humanity such as the stewardship of the global commons for future generations.

UTokyo will further promote dialogue with diverse stakeholders in our mission and ideals and will work hand in hand with society to create an ideal vision for a shared future.

UTokyo COMPASS 20 Goals

Establishing Management Capacity
1. Develop an Autonomous and Creative University Model
2. Formulate a Sustainable Management Strategy and Expand the Functions of the University
3. Cultivate Support and Appreciation for the University's Roles

PERSPECTIVE 1
Knowledge
4. Seek Solutions to Global Problems
5. Promote Diverse Scholarship
6. Generate Excellent Academic Knowledge
7. Generate Value through Co-creation with Industry
8. Promote Responsible Research

PERSPECTIVE 2
People
9. Nurture Inclusiveness and Capacity for Creative Dialogue
10. Nurture an International Outlook
11. Undergraduate Education: Cultivate Disciplinary Expertise, Wide-ranging Knowledge, and High Ethical Standards
12. Graduate Education: Cultivate Advanced Disciplinary Expertise and Practical Capabilities to Tackle Next-Generation Problems
13. Support Early-Career Researchers
14. Cultivate Administrative Staff with Advanced Expertise and a Creative Mindset
15. Connect the University and Society through Bidirectional Recurrent Education

PERSPECTIVE 3
Place
16. Create a Supportive and Empowering Campus that Anyone in the World Would Want to Join
17. Support Education and Research Activities
18. Expand the Campus in Cyberspace
19. Extend Our Place into Wider Society
20. Extend Our Place Internationally

Plan 1. Manage global systems responsibly
Plan 2: Decarbonize the activities of the UTokyo organization

Plan 3. Pursue co-creation with local communities toward green transformation

Achieving a Low-Carbon Society, Starting with the University

The University of Tokyo (UTokyo) established the Todai Sustainable Campus Project (TSCP) in April 2008 in order to provide a model for the sustainable society of the future as an educational and research institution. In July of the same year, the TSCP Office, an expert organization under the direct control of the President, was established. Since July 2022, it has continued its activities as the TSCP Team of the Environmental Group in the Facilities Department. The TSCP has a wide range of activities, but its top priority is to reduce CO_2 emissions.

In 2008, when the TSCP was established, it announced a target for reducing CO_2 emissions related to energy use. It aims to reduce CO_2 emissions by 50% by FY2030, compared to FY2006, the base year. This target is known as TSCP 2030. Thus far, the TSCP 2012 set as a short-term target and the TSCP 2017 set as a medium-term target have been achieved with the cooperation of the various departments. At present, we are working to achieve a 18% reduction by FY2023 (TSCP 2023), compared to FY2017.

In October 2022, we formulated the UTokyo Climate Action as an action plan to achieve net-zero greenhouse gas emissions by 2050. We also set the target of reducing Scope 1 and Scope 2 CO_2 emissions by 50% by FY2030, compared to the base year of FY2013 (Figure 1).

The trend in CO_2 emissions related to energy use is shown in Figure 2 as an index excluding advanced experimental facilities, compared to FY2006, the base year. On a scale of 100 for FY2006 emissions, FY2021 emissions were 73.5 (-26.5%) in terms of area and 59.8 (-40.2%) in terms of ordinary income. Although the floor area of the University as a whole has increased along with the level of activity, the efforts of TSCP and the understanding and cooperation of university members have helped to mitigate the increase in CO_2 emissions even as activities have increased.

Concrete efforts so far have focused on improving the efficiency of large air-conditioning heat source facilities and individual distributed air conditioners as measures to update energy-saving facilities (Figure 3). Currently, over the course of several years, we have been working to convert more than 100,000 Hf lights on campus into LEDs. Furthermore, as part of our energy conservation awareness activities, we have been involved in the visualization of electric power, the distribution of energy conservation awareness stickers, and the formulation of energy conservation guidelines for laboratory facilities. We are also striving to foster awareness of energy conservation among University members, including students, academic and administrative staff members. In this way, TSCP has prioritized measures to increase energy efficiency (energy conservation) at the University. Looking ahead to 2030, we will strive to introduce energy creation facilities in addition to accelerating the implementation of rigorous energy conservation measures. In the area of energy creation, we are promoting a plan to introduce on-site, self-consumption solar power generation facilities.

Our university has slightly under 40,000 members, which puts it on the same scale as a city. If we are able to reduce the University's CO_2 emissions, then this step toward decarbonization will visualize a path whereby a low-carbon society can be realized, and it will contribute toward the achievement of many of the SDGs. The major mission of the University is to conduct educational and research activities. Although it is difficult to maximize these activities while reducing CO_2 emissions, we believe it is our mission to take on this challenge, and we are proceeding with the project.

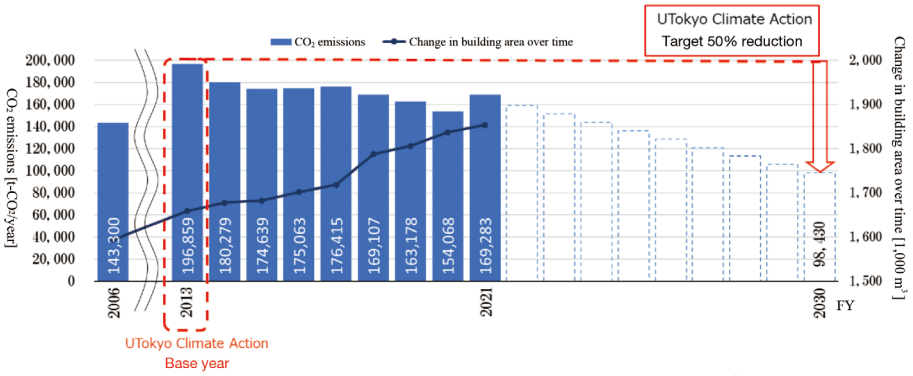


Figure 1. Change in CO_2 emissions from energy use and future targets for the University as a whole

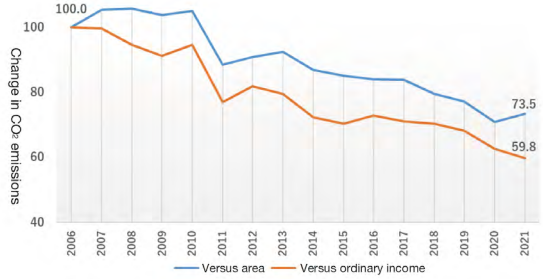


Figure 2. Change in CO_2 emissions from University-wide energy use, per unit area and per ordinary income (excluding advanced experimental facilities)

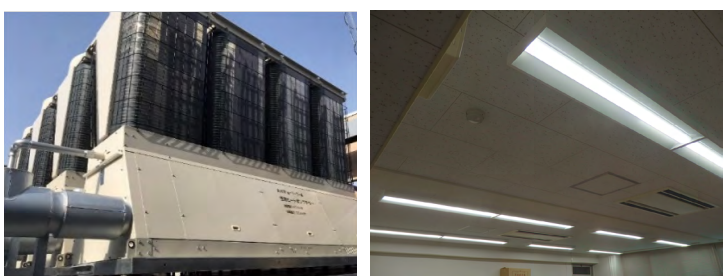


Figure 3. Measures to update energy-saving facilities
Left: After updating large air-conditioning heat source facilities,
Right: After switching from Hf lighting to LED lighting

Chapter 4

Responsibilities and Roles of the University of Tokyo

Responsibilities and Roles of the University of Tokyo in Response to Global Warming

Activities of the TSCP Student Committee (UTokyo Sustainability)

TSCP Student Committee Chairperson Sonoka Bekki

https://utsustainability.wixsite.com/2021

A truly sustainable campus requires the participation of students, who make up the largest population on the campus. To this end, the TSCP Student Committee, which was established in July 2015, is working on a variety of measures to promote the creation of a sustainable campus by adopting the "student perspective."

1. Overview of the TSCP Student Committee

The TSCP Student Committee (UTokyo Sustainability), in cooperation with the TSCP team working on the University of Tokyo Sustainable Campus Project (TSCP), is working from the perspective of students to realize a sustainable campus with a low environmental impact. This article introduces our FY2022 initiatives, which revolved around two areas: raising students' awareness of sustainability and exchanges with student organizations at other universities.

2. Raising students' awareness of sustainability

Raising students' awareness of sustainability will be a major force in achieving a sustainable campus. In FY2022, we implemented two measures to raise awareness.

The first measure was to conduct the Sustainability Awareness Survey of UTokyo Students 2022, a survey of students currently enrolled at the university. This is the fourth time that this survey has been conducted on a large scale with the cooperation of the University using internal systems. Details of the results can be found on page 24 of the Japanese edition. The second initiative was the UTokyo Sustainability Office Hour 2023. The purpose of this event was to raise awareness of activities within UTokyo. Therefore, the event invited academic and administrative staff who are implementing initiatives to improve sustainability and promote GX at the University of Tokyo. This project was planned in response to the many people who indicated in the last awareness survey that "it will be necessary to inform members of the University of Tokyo about these GX efforts and ask for their cooperation".

3. Exchanges with sustainability-related student organizations at other universities

In FY2022, we actively engaged in exchanges with students from other universities who are working on sustainability and environmental issues. In December, we participated in the largest environmental exhibition in Japan, EcoPro 2022, where we interacted with university students from all over the country. We also participated in "Exchange of Ideas and Opinions on the Introduction of Sustainability-related Initiatives at Universities in Bunkyo Ward." In January 2023, we presented the activities of the TSCP Student Committee as examples of energy conservation efforts by Japanese university students to university students from Saudi Arabia participated in a workshop on energy conservation.

Each university is accelerating its measures to improve sustainability. We will further increase cross-university exchanges so that good examples from other universities can be incorporated into the University of Tokyo, and good examples from the University of Tokyo can be disseminated to other universities.

4. Future of the TSCP Student Committee

On June 2023, the TSCP Student Committee joined with the University of Tokyo's UTokyo Sustainable Network, a volunteer group of students interested in sustainability, to form the GX Student Network (GXSN), which will work under the GX Promotion Group and TSCP team of the Environmental Group as a university-authorized student organization. The TSCP Student Committee will expand its activities into areas other than energy conservation, which was the main theme of the TSCP Student Committee. In order to accelerate GX and the sustainability transformation of the University of Tokyo, we would like to make this a year in which we leverage the students' ability to take action in order to implement various measures. If you are interested, please contact us.

Figure 1. Scene from a regular meeting. Face-to-face meetings have resumed.

Figure 2. Scenes from the UTokyo Sustainability Office Hour 2023. You can watch the recording here. https://youtu.be/llwqu7qoPHI

Figure 3. View of the "EcoPro 2022" booth.

Chapter 5

Environmental Safety Management Initiatives

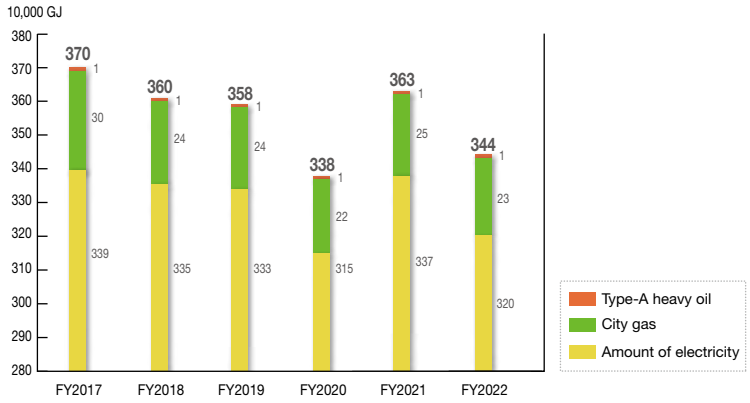
01 Use of Energy and Water

The University of Tokyo has set its own CO_2 emission reduction targets as part of its TSCP activities and is promoting measures to reduce CO_2 emissions throughout the University. In FY2020, electricity consumption, gas consumption, and primary energy consumption decreased owing to restrictions on activities throughout the University during the COVID-19 pandemic. In FY2022, primary energy consumption was expected to increase owing to the easing of the restrictions on activities that accompanied the spread of COVID-19. However, in part because of the shutdown of the supercomputer at the Kashiwa Campus, the primary energy consumption actually decreased 6.0% year-on-year. In keeping with the responsibilities of an educational and research institution, we will continue striving to meet the challenge of reducing the total amount of CO_2 emissions.

*Because of rounding up/down, the sum of the numbers for each item may not match the total value on the graph.

*In order to clearly indicate the base year (FY2017) for the TSCP target, energy-related graphs for this fiscal year present figures for the past six years.

Primary energy consumption



The energy consumed by the University of Tokyo as a whole in FY2022, including electricity and gas, amounts to approximately 3.44 million GJ of primary energy.

Conversion factor
Electric power: 9.76 GJ/MWh
City gas: 45 GJ/1,000 m^3
Oil (Type-A heavy oil): 39.1 GJ/kl

*In previous reports, there were errors in the primary energy consumption totals for FY2017 and FY2018, and therefore the figures have been corrected since Environmental Report 2020.

CO_2 emissions (energy sources)

The University of Tokyo emitted approximately 157,000 tons of CO_2 in FY2022.

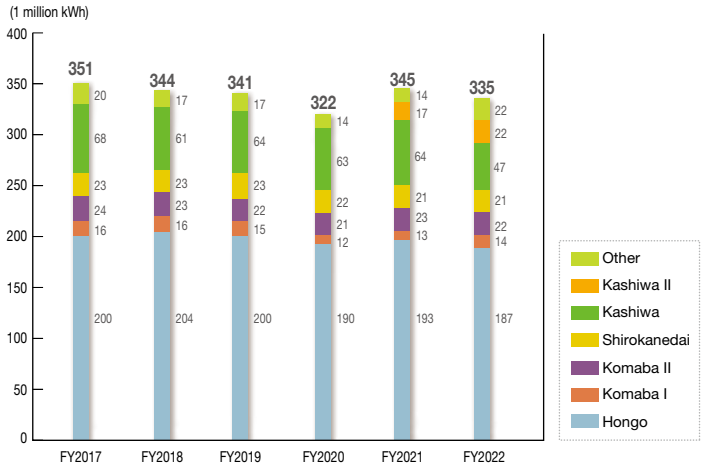
CO_2 emission factor
Electricity: bottom of graph
City gas: 2.31 kg-CO_2/m^3
Oil (Type-A heavy oil): 2.71 kg-CO_2/l

*In previous reports, there were errors in the CO_2 emission totals for FY2017 and FY2018, and therefore the figures have been corrected since Environmental Report 2020.

Chapter 5

Environmental Safety Management Initiatives

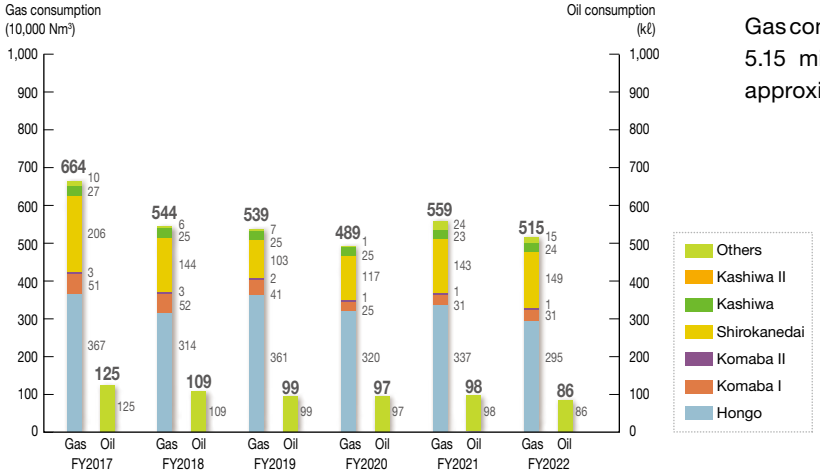
Electric power consumption



Electricity consumption in FY2022 was approximately 335 million kWh.

*In previous reports, there was an error in the electric power consumption total for FY2018, and therefore the figures have been corrected since Environmental Report 2020.

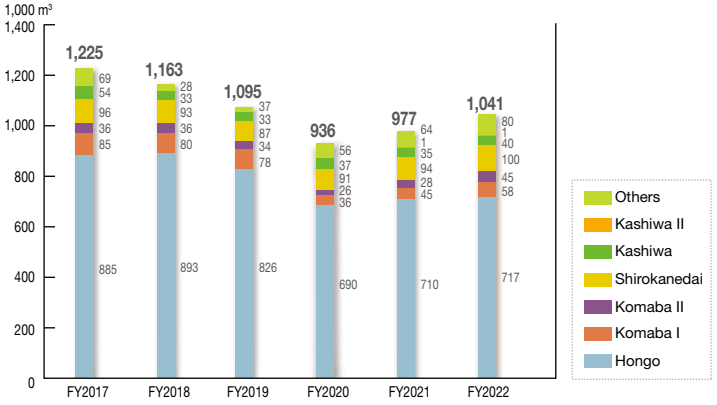
Gas and oil consumption



Gas consumption in FY2022 was approximately 5.15 million Nm³, and oil consumption was approximately 86 kL.

*In previous reports, there were errors in the gas consumption totals for FY2017 and FY2018, and therefore the figures have been corrected since Environmental Report 2020.

Water resource consumption



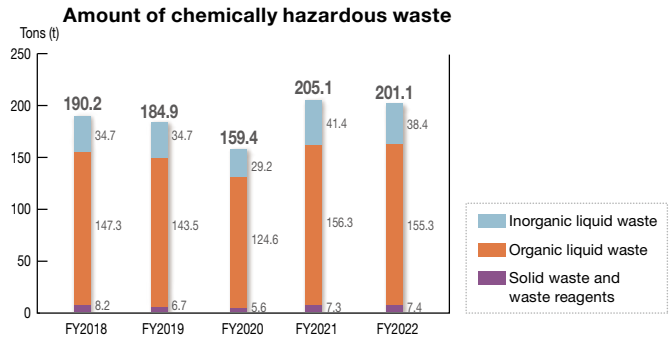
In FY2022, we used approximately 1,041,000 m³ of water resources (tap water + well water).

*In previous reports, there was an error in the water resource consumption total for FY2019, and therefore the figures have been corrected since Environmental Report 2021.

02 Waste Management

Environmental Science Center centrally collects and manages chemically hazardous waste generated by research and educational activities at the University of Tokyo. For each type of chemically hazardous waste, Environmental Science Center selects a waste disposal company that can properly treat the waste and entrusts them with waste disposal. Furthermore, regular inspections are conducted to confirm that the waste treatment is being carried out properly.
As for infectious waste, each department within the University of Tokyo is responsible for selecting and contracting with outside contractors who can conduct proper disposal. Concerning domestic waste, we are making efforts to reduce the amount and to promote recycling by thorough sorting.

Experimental waste

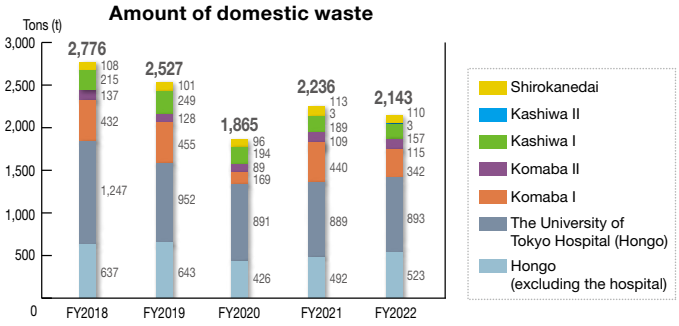


*Because of rounding up/down, the sum of the numbers for each item may not match the total value on the graph.

Although the total amount of waste discharged from university laboratories is not large, the contents of waste are highly various and the waste contains a wide variety of hazardous substances. For this reason, the University of Tokyo requires dischargers of experimental wastes containing chemically hazardous substances to take the environmental safety training course to obtain the discharge qualification. Dischargers properly classify chemically hazardous wastes according to the rules, accurately describe their composition, and discharge them to Environmental Science Center. After inspection and analysis at Environmental Science Center, the waste is entrusted to the off-campus waste disposal facilities, as described above.

In FY2020, the amount of experimental waste decreased owing to restrictions on activities throughout the University that accompanied the spread of COVID-19, but in FY2021, it returned to pre-COVID-19 levels. In FY2022, the figure was almost the same as the previous year (slight decrease of about 2%).

Domestic waste

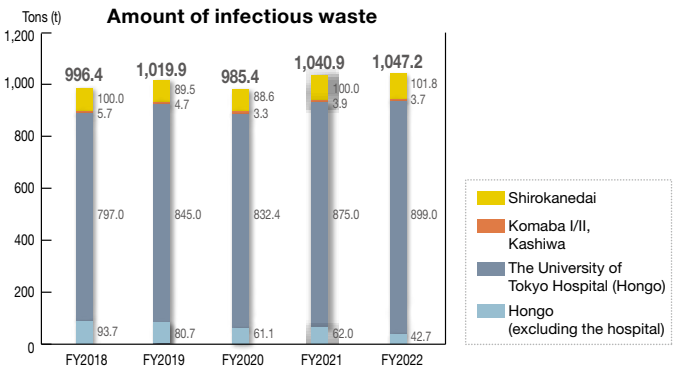


*Due to an error in the results of the FY2018 totals, the figures have been corrected in the reports for FY 2022 and later.

Sorting rules for domestic waste differ slightly from campus to campus, but the basic policy is to recycle what can be recycled. Only that which cannot be recycled is disposed of as combustible or non-combustible waste. Paper waste, empty cans, empty bottles, PET bottles, etc. are sorted, and paper waste is further subdivided into copier paper, magazines, miscellaneous paper, cardboard, etc.

With the exception of the large drop caused by the COVID-19 problem in FY2020, the amount of domestic waste generated over the past five years has shown a gradual downward trend.

Infectious waste



*Due to errors in the results for the FY2019 and FY2020 totals, the figures have been corrected in the reports for FY2022 and later.

It is essential that infectious waste be properly sorted at the site of generation under strict management, and the University of Tokyo is also fully committed to proper handling. Furthermore, the University of Tokyo has established its own rules for disposing of syringes and needles used in non-medical experiments as infectious waste from the standpoint of public acceptance.

In FY2022, the amount of infectious waste was almost the same as the previous year (slight increase of about 0.6%).

Chapter 5

Environmental Safety Management Initiatives

03 Status of Compliance with Environmental Laws and Regulations

In FY2022, the University of Tokyo received no guidance, recommendations, orders, or dispositions from regulatory authorities for violations of environmental laws and regulations (laws and ordinances on pollution control, such as the Water Pollution Control Law, Sewerage Law, and Air Pollution Control Law; laws and ordinances on resource circulation and proper waste disposal; and laws and ordinances related to energy conservation, etc.).

In order to prevent accidental discharge of hazardous substances used in experiments, we will continue to take measures such as holding safety education sessions, conducting patrols, and servicing equipment.

04 About the PRTR System

The University of Tokyo uses the University of Tokyo Chemical Information Management System (UTCIMS) to calculate the amount of chemical substances released into the environment at all laboratories every fiscal year. The results are submitted as a PRTR system notification (Act on the Assessment of Releases of Specified Chemical Substances in the Environment and the Promotion of Management Improvement: Chemical Management Act).

The PRTR system applies to entities that handle one ton or more of Class 1 designated chemical substances and 0.5 ton or more of specified Class 1 designated chemical substances annually. In FY2022, the PRTR law applied to two campuses: the Hongo Campus and the Komaba Campus. At the Hongo Campus, a total of four substances, acetonitrile, chloroform, methylene chloride and normal hexane, were subject to the PRTR system, and at the Komaba Campus, a total of one substance, chloroform, was subject to the system. As usual, proper notification was given.

Amounts of chemical substances released and transferred

Name of campus	Name of substance	Amount handled	Amount discharged	Amount transferred	
			Ambient air	Sewerage	Sites other than offices
Hongo	Acetonitrile (kg)	1,500	40	0.0	3,400
	Chloroform (kg)	4,600	40	0.0	4,100
	Methylene chloride (kg)	5,100	150	0.0	7,100
	Normal hexane (kg)	5,500	130	0.0	11,000
Komaba I	Chloroform (kg)	2,200	0.7	0.0	2,200

*Each calculation result is displayed with two significant digits.
*For substances other than dioxins, the figures are rounded to the nearest two decimal places in accordance with the regulations of the Ministry of Health, Labour and Welfare when the amount discharged or transferred is less than 1 kg.

05 PCB

Polychlorinated biphenyl (PCB) waste is designated as specially controlled general waste and specially controlled industrial waste under the Waste Management Law, and requires strict management.

In accordance with the Law Concerning Special Measures against PCB Waste, the University of Tokyo detoxified approximately 32 tons in FY2020 and approximately 33 tons in FY2021 of fluorescent lamp ballasts containing high concentrations of PCBs that were stored at the Hongo Campus and other sites at the processing sites of Japan Environmental Storage & Safety Corporation, a high-concentration PCB waste processing company.

Next, approximately 48 tons of stored low-concentration PCB waste were separated for processing in FY2022 and FY2023, with approximately 39 tons detoxified in FY2022.

We will continue to make efforts to properly store, transport, and dispose of the remaining low-concentration PCB waste.

06 Asbestos

Since the announcement in late June 2005 of industrial accidents at workplaces where asbestos was used, several cases have been taken up, and asbestos has become a major social problem that affects not only workers but also their families and the residents around the factories. As the latency period for the health effects caused by asbestos is long (more than 20 years), appropriate measures must be taken over a long period of time. We are also working to grasp the current situation of asbestos use and thoroughly implement safety measures.

In March 2006, after repeated discussion concerning the handling of asbestos in a WG formed of knowledgeable people within the University, we established the University of Tokyo Asbestos Countermeasures Guidelines (hereinafter referred to as “the Guidelines”) to prevent health problems caused by asbestos in students, faculty, and staff. The Guidelines provide for appropriate maintenance and management not only of sprayed asbestos, but also of asbestos-containing laboratory equipment, to prevent health problems.

At present, in accordance with the Guidelines, asbestos labels are attached to rooms and laboratory equipment where asbestos has been confirmed present to make it known that asbestos is being used. At the same time, exposure prevention measures are implemented according to the status of asbestos management, and alerts are issued to prevent health problems. In addition, we have established an Asbestos Consultation Desk within the University to provide health consultations for those who have health concerns involving asbestos and to provide medical examinations for those who wish to receive them.

The number of rooms in the University that have sprayed asbestos decreased from 56 at the end of FY2021 to 36 at the end of FY2022 (partial in the case of 15 rooms). In addition, through containment, etc., we are confirming that facilities are kept in a condition where there is no danger of asbestos scattering, and we are working to reduce the amount of asbestos present on campus and ensure appropriate management by systematically removing sprayed asbestos and promoting appropriate maintenance and control of asbestos-containing laboratory equipment in research laboratories, etc., including educating the University community about the need to replace asbestos-containing materials with non-asbestos materials and upgrade equipment.

Sprayed asbestos

(in ceiling)

Asbestos has been used

(laboratory equipment, etc.)

Not clear whether or not asbestos has been used

(laboratory equipment, etc.)

Sprayed asbestos

(contained)

Sprayed asbestos

(stable)

Chapter 5

Environmental Safety Management Initiatives

07 Contributions to the SDGs

The University of Tokyo established the UTokyo Future Society Initiative (UTokyo FSI) in July 2017, under the direct leadership of the university president. The aim of the Initiative is to promote effective collaboration and to contribute to the future of humanity and the planet, based on the University's mission of serving the global public as outlined in the University of Tokyo Charter. In order to imbue such collaborative activities, we are striving to leverage the SDGs (Sustainable Development Goals) that align with the University's mission, to the maximum extent possible.

The University of Tokyo has constructed a system to create synergy and social value between the University's diverse activities by visualizing and publicizing such activities that contribute to 17 SDGs as the Future Society Initiative SDGs Projects. As of June 1, 2023, there were 208 registered projects.

08 Response to the Race to Zero

The University of Tokyo positioned Green Transformation (GX) as one of its action plans in the "UTokyo Compass" action guideline announced on September 30, 2021. In October of the same year, the University of Tokyo became the first Japanese national university to participate in the Race to Zero international campaign under the United Nations Framework Convention on Climate Change (UNFCCC).

In April 2022, the GX Promotion Subcommittee was established under UTokyo FSI to coordinate university-wide GX-related activities and prepare a Race to Zero roadmap. In October of the same year, the UTokyo Climate Action (CA) was formulated as an action plan to achieve net-zero greenhouse gas emissions. The plan calculates Scope 1, 2, and 3 greenhouse gas emissions and sets the reduction targets for each Scope as follows. (The baseline for the reduction target is 2013.)

	2030	2040	2050
Scope 1,2	50%	75%	100%
Scope 3	25%	50%	75%
Total	34%	67%	100%

Cover of UTokyo Climate Action

CA has outlined reduction measures to achieve this goal. Measures to reduce Scopes 1 and 2 include promoting energy conservation, introducing renewable energy, and using certificates and credits. The energy conservation measures that we are considering incorporate not only modification of building facilities but also using DX to strengthen environmental and energy management and change behavior. In the area of renewable energy, we have started introducing PV systems on campus, and we will also consider introducing off-site renewable energy sources and self-consignment in the future. Careful consideration must be given to the use of certificates and credits, and we will consider the creation of high-quality credits using the University of Tokyo Forests, etc. Scope 3 emissions accounts for approximately 3/4 of total GHG emissions (2021 data), but at present it is calculated using emission factors from commonly available LCA databases and is not necessarily appropriate as an emission factor to evaluate the effect of introducing measures. In order to reduce Scope 3 emissions, it will be essential to improve calculation accuracy by obtaining appropriate emission factors in cooperation with parties outside the university, such as suppliers, outsourcing facilities, and contractors, and to discuss reduction measures. The development of such a methodology itself is regarded as Climate Action.

The development of CA is a necessary process for fulfilling the responsibilities of the Race to Zero participating institutions. Through the development process, basic information has been developed for students, faculty, and staff to work together to strengthen the University of Tokyo's sustainability initiatives. We plan to periodically check the progress of the CA and report the results, as well as review the measures necessary to achieve the targets.

■ **Link to introduction of actions**

https://www.u-tokyo.ac.jp/ja/about/actions/gx/about.html

About GX at the University of Tokyo


東京大学
THE UNIVERSITY OF TOKYO


EHS
東京大学環境安全本部
Environment, Health and Safety, UTokyo