Environmental Report 2022

Ochanomizu University

Ochanomizu University Environmental Report 2022

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1 Greetings from the President

The world now faces a variety of difficulties such as the spread of new infectious diseases, severe climate changes, resource depletion, environmental pollution, and demographic upheaval. We must find solutions to these pressing global issues to a sustainable global society.

Ochanomizu University will strive to resolve these issues by establishing a research and innovation center and promoting cutting-edge research through a fusion of academic areas that transcends the boundaries of the humanities and sciences. We will aim to “realize a sustainable society where no one is left behind”, which is the principle of “Sustainable Development Goals (SDGs)”.

Since its foundation in 1875(the 8th year of the Meiji era), Ochanomizu University, based on its tradition of and achievements in shaping women who will play an active role in Japan and abroad, has been committed to supporting all women, regardless of their age or nationality, by protecting their individual dignity and rights, in order to help them deepen their learning and proactively challenge themselves to develop their own unique qualities and abilities. Our mission is "to be a place where all women who are motivated to learn can realize their earnest dreams”.

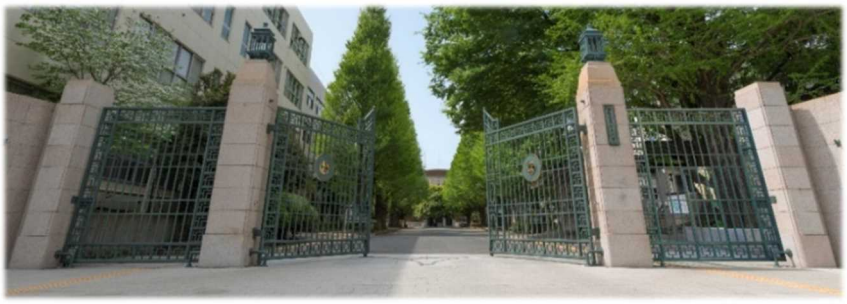
We will promote human resource development and social contribution activities by realizing our university's mission and promoting education and research to protect the global environment in the future. We will also strive to realize a safe, secure, environmentally friendly, and sustainable campus in consideration of the SDGs, such as reducing CO_2 emissions to achieve carbon neutrality and contributing to the improvement of the local environment.

In addition, regarding education and daily activities related to environmental maintenance and conservation, not only the university but also its affiliated schools are actively implementing projects to realize a sustainable society. In the past, the report "The Limits to Growth" had a profound impact on the people of the world, becoming a wake-up call for modern society; however, since then, environmental problems have continued to worsen. Nevertheless, the worsening has led the young people of the next generation to find the current situation unbearable, and they have begun to raise their voices. Many people have realized the true nature of the serious environmental problems we are currently facing and are beginning to work toward a solution. It could be said that finding environmental solutions is acually about exploring the realities of the Anthropocene and determining how to implement SDGs as policies. In any case, our university and its affiliated schools will work together to address various issues faced by modern society, including environmental problems, in an effort to move toward the sustainable development of humankind through the examination of evidence-based scientific measures.

This report is a review and summary of the university's environmental efforts towards these global environmental conservation projects. We hope you will take the time to read this report and learn more about the university's environmental improvement activities.

Yasuko Sasaki

President
Ochanomizu University



The main gate, one of the Registered Tangible Cultural Properties of Japan

Environmental Policies of Ochanomizu University

Ⅰ. Basic Philosophy

Ochanomizu University recognizes various environmental problems as urgent issues to be solved at a global level. We try to create a secure and safe campus while taking the global environment into consideration, and we play an active role in our society to realize a sustainable world. We also contribute to the creation of a prosperous future by striving, through our daily educational research and other activities, to help our students and employees develop into people who are aware of and capable of solving the environmental issues facing modern society.

Ⅱ. Basic Policies

Based on our basic philosophy, we pursue environmental efforts under the five basic policies presented below.

Promotion of Energy Conservation	Effective Use of Natural Resources	Prevention of Toxic Substance Leaks
Promotion of Pro-Environment Activities and Development of Pro-Environment People		
Social Accountability and Information Transmission		

1. Promotion of Energy Conservation

Based on the "Ochanomizu University Energy Management Standard", we concentrate to our efforts on carbon neutrality by promoting energy conservation on campus and educating all members of the university about energy conservation.

2. Effective Use of Natural Resources

We aim to be an eco-campus by reducing and effectively utilizing environmental resources consumed on campus and reducing waste discharged off campus.

3. Prevention of Toxic Substance Leaks

We prevent the leaking of toxic substances and pollutants by complying with environmental laws and regulations and properly managing all chemical substances.

4. Promotion of Pro-Environment Activities and Development of Pro-Environment People

We aim to help our students and staff develop into people with environmental mindsets who can think independently and actively work toward solving environmental problems through various environmental conservation activities, education, and research activities.

5. Social Accountability and Information Transmission

We aim to serve as a bridge between the local and international communities by transmitting information widely within and outside the university on the university's environmental philosophy, initiatives, and achievements in environmental considerations.

(Established in September 2021)

Our Efforts to Achieve SDGs

Ochanomizu University HP<Our Efforts to Achieve SDGs>
https://www.ocha.ac.jp/program/menu/sdgs/top.html

SDGs (Sustainable Development Goals), which were adopted by the UN Summit held in 2015, are universal goals whose principle is based on the concepts of “inclusive society” and “leave no one behind.” It requires various countries, companies, and institutions to tackle and achieve specific global goals by 2030. We have been actively committed in various ways to achieving the SDGs, which consist of 17 goals and 169 targets. In 2022, we launched an “Institute for SDGs Promotion” project to contribute to greater SDG achievement than before.

In this report, we use icons to indicate the SDGs related to each of our environmental initiatives (see P.7).

Our Efforts to Realize Carbon Neutrality

The "Coalition of Universities and Other Institutions Contributing to Achieving Carbon Neutrality," established in July 2021, aims to discuss ideal ways and directions for decarbonization through collaboration among universities and other institutions, to promote research and development and social implementation of achievements, and to strengthen the ability to transmit information domestically and internationally.

In addition, we are implementing the following initiatives to achieve a zero-carbon campus:

*Implementation of carbon-neutral measures

To improve energy-saving measures on campus, we have formulated a maintenance and construction plan that includes switching to LED lighting and improving the efficiency of air-conditioning equipment.

*Procurement of electricity from 100% renewable energy

Regarding power procurement for the Otsuka Building No. 1 complex from fiscal 2022, we have signed a contract to procure 100% of the power needs from renewable energy sources.

Annual Environmental Report Policy

***Aim**

The university has made and released an environmental report since fiscal year 2021. The university's environmental policy, initiatives, achievements, and other information are widely reported to our stakeholders: our students at all levels, graduates, prospective students, patrons, faculty and staff, local inhabitants, corporations, and local governments. The reports are also used as a communication tool to connect the university with society by clarifying the direction in which the University is aiming to address various environmental issues.

***Areas included in this report**

Ochanomizu University Otsuka Building No. 1, Otsuka Building No. 2, Itabashi Building, Higashimurayama Building, Tateyama Building

***Reporting period for information provided**

FY2021 (April 2021 – March 2022)

***References**

Ministry of the Environment, “Environmental Reporting Guidelines 2018”

Ministry of the Environment, “Manuals for Items to be Reported in Environmental Reporting, etc. (ver. 3)”

3 University Overview

Ochanomizu University Campus Overview

The University's campus consists of five buildings: Otsuka Building No. 1 (Bunkyo-ku, Tokyo) is the main campus, Otsuka Building No. 2 (Bunkyo-ku, Tokyo) and the Itabashi Building (Itabashi-ku, Tokyo) are student housing facilities, the Higashimurayama Building (Higashimurayama-shi, Tokyo) is a suburban garden (farm), and the Tateyama Building (Tateyama-shi, Chiba) contains the Coastal Biology Education and Research Center and outdoor education facilities.

The total land area of these five buildings is approximately 140,200 ㎡ and the total building area is approximately 102,300 ㎡. The main campus, Otsuka Building No. 1, has a land area of approximately 113,700 ㎡ (81% of the total) and a building area of approximately 89,100 ㎡ (87% of the total). It occupies a large portion of the university's total land area.

No.	Building name	Address	Main facility	Site area / building floor area
1	Otsuka Building No. 1	Otsuka 2-1-1, Bunkyo-ku, Tokyo	University building, University library, Student support facility, Attached school building	113,741 / 89,114
2	Otsuka Building No. 2	Otsuka 1-6-6, Bunkyo-ku, Tokyo	Koishikawa Dormitory, Ochanomizu University SCC Ubiquitous Experimental House	2,553 / 2,784
3	Itabashi Building	Nakamachi 2-1, Itabashi-ku, Tokyo	International Student House	8,029 / 9,318
4	Higashimurayama Building	Hagiyama-cho 2-3-1, Higashimurayama-shi, Tokyo	Suburban Garden (farm)	7,261 / -
5	Tateyama Building	Koyatsu 11, Tateyama-shi, Chiba	WanganBiological Education and Research Center, Tateyama Outdoor Education Facility	8,623 / 1,107

*Area as of May 1, 2021

Otsuka Building No. 1 (Otsuka Campus) Overview

Present Condition of the Site

Otsuka Building No. 1 is surrounded by National Route 254 (Kasuga Dori), ward roads, and private residences, and is in an area with a mix of educational facilities such as universities, high schools, and junior high schools, as well as apartments and single-dwelling residences. The main gate faces the national road on the northeast side of the site, and the main building of the university is located directly in front of the gate. There is a private university, a school affiliated with another national university, and a public junior high school on the south side of the site. Other buildings are sites adjacent to single-family homes and condominiums.

Educational Environment

Ochanomizu University is a women's university with three faculties: Letters and Education, Science, and Human Life and Environmental Sciences. All faculties, graduate schools, research centers, the library, and many other university functions are concentrated in Otsuka Building No. 1. This site is also home to an affiliated kindergarten, elementary school, junior high school, high school, Bunkyo-ku Ochanomizu University Kindergarten, and Izumi Nursery (daycare facility). The educational environment is based on a consistent philosophy developed through collaboration among the affiliated schools, university, and graduate school.

Natural Environment

Many trees are planted on the campus. It is a valuable green space not only for the university but also for central Tokyo. The garden contains donated trees, commemorative trees, and rare plants, including a maple tree gifted by Empress Kojun of Japan. In addition, the Tokyo Bunkyo-ku Green Protection Regulation requires that greenification standards be met when planning buildings above a certain size. In preserving the greenery on our site, we are striving to maintain and preserve green areas while taking such factors into consideration.

Building area / Population

Universities/Graduate Schools

Building area	18,743 ㎡
Total floor area	64,816 ㎡
Population	
Undergraduate students	2,020 people
Faculty of Letters & Education	919 people
Faculty of Science	540 people
Faculty of Human Life & Environmental Sciences	561 people
Graduate students	787 people
Foreign students	192 people
Research students, etc.	48 people
Faculty and staff	370 people
	Total 3,417 people

Affiliated school

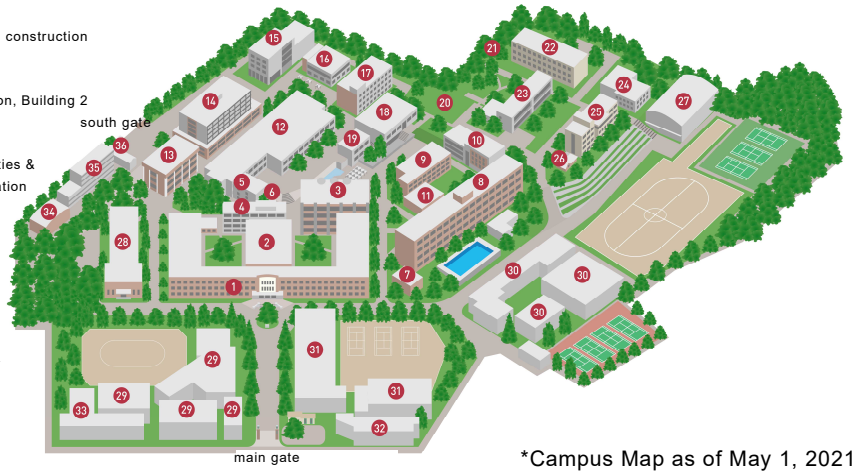
Building area	10,431 ㎡
Total floor area	21,404 ㎡
Population	
High school students	362 people
Junior high school students	329 people
Elementary school students	631 people
Kindergarten children	159 people
Nursery school children	103 people
Faculty and staff	109 people
	Total 1,693 people

*Building area & population as of May 1, 2021

CAMPUS MAP

List of facilities

① Main Building
② Auditorium (Kiindo)
③ Integrated Research Building
④ Faculty of Human Life & Environmental Sciences, Building 2
⑤ Ochadai Academic Production Research Building
⑥ Outdoor Elevator Building
⑦ Radioisotope Research Center
⑧ Faculty of Science, Building 1
⑨ Faculty of Science, Building 2
⑩ Faculty of Science, Building 3
⑪ IT Center
⑫ University Library
⑬ Student Service Building
⑭ Faculty of Letters & Education, Building 1
⑮ Inter-Faculty Building 1
⑯ Inter-Faculty Building 2
⑰ Inter-Faculty Building 3
⑱ Cafeteria
⑲ Health Care Center
⑳ Student Dormitory planned construction site
㉑ Archery Field
㉒ Faculty of Letters & Education, Building 2
㉓ Student Commons
㉔ Student Meeting Center
㉕ Graduate School of Humanities & Sciences / University Innovation Research Building
㉖ Tea House (Houkou-an)
㉗ University Gymnasium
㉘ Kindergarten
㉙ Elementary School
㉚ Junior High School
㉛ High School
㉜ Hisao & Hiroko TAKI PLAZA
㉝ University Hall
㉞ Izumi Nursery
㉟ Ohtsuka Lodging
㊱ Center for Early Childhood Education and Care



*Campus Map as of May 1, 2021

Campus Environmental Maintenance Policy

In the Campus Master Plan 2021, one of the basic policies sets the goal of "realizing an education and research environment that takes the global environment into account" to create a safe, secure, and appealing campus in consideration of the SDGs. In accordance with this basic policy, we promote integrated global environmental measures that maintain a green, natural environment and take energy conservation into consideration to realize a sustainable campus environment.

Specific maintenance policies based on the Campus Master Plan 2021 are as follows.

1. We will promote the preservation and succession of trees on campus and the maintenance and preservation of the existing natural environment by utilizing them for educational purposes.
2. We will upgrade and maintain facilities and equipment that have deteriorated due to age and reduced functionality so that they can be used effectively over the long term.
3. We will develop a plan to actively incorporate global warming countermeasures (energy conservation, prevention of global warming, etc.) into the development of facilities.
4. We will promote the development of environmentally friendly facilities to maintain a sustainable, environmentally proactive campus by implementing global warming countermeasures in accordance with relevant laws and regulations and striving to reduce greenhouse gas emissions.

Ochanomizu University HP < CMP2021 publication page>
https://www.ocha.ac.jp/archive/introduction/CPM2021ver20210329.pdf

Outline of Otsuka 2 Housing

Current Status of the Site

Otsuka 2 housing complex is a 3-minute walk from Otsuka 1 housing complex and is located on the boundary between an educational district with private universities and other educational facilities and a residential area. The north and east sides of the site are bordered by Atomi Gakuen and Teijin Gakuen, with Takushoku University on the west side across the front road and a quiet residential area on the south side.

Educational Environment

Two student dormitories, Koishikawa Dormitory and Ochanomizu University SCC, are located in the Otsuka 2 Complex, and the Ubiquitous Experimental House, an experimental facility, is located on the site next to the Koishikawa Dormitory. The Koishikawa Dormitory is a student dormitory for graduate students and is managed through the self-governance of the residents. Ochanomizu University SCC is a student dormitory for first- and second-year undergraduates. Based on the concept of "a space to live together and grow together," the house system is designed for loose coexistence, with a small community of 5 people within each separate house. It is a new type of dormitory that places importance on human relationships, with a lounge and common room where dormitory students can interact with each other.

Outline of Itabashi Danchi

Current Status of the Site

Itabashi Danchi is located in a quiet residential area, a 10-minute walk from Oyama Station on the Tobu Tojo Line. It is adjacent to Tokyo Metropolitan Itabashi College of Nursing on the east side, and the rest of the area is residential. The commute to the university is approximately 35 minutes by train and on foot.

Educational Environment

Itabashi Danchi was designed to incorporate international student housing. It consists of six residential buildings, a central building, and an entrance building for common use. The International Student House was a mixed housing system designed for Japanese students and international students enrolled in TMDU and other national universities. It was established to contribute to the promotion of international exchange. However, due to the aging of the building and the need to ensure the safety of students in the event of a disaster, the International Student House was discontinued at the end of FY2021, and a new student housing facility (Ochanomizu University Otowakan) was established in the Otsuka 1 complex.

Outline of Higashimurayama Danchi

Current Status of the Site

Higashimurayama Danchi is located at a 4-minute walk from Hagiyama Station on the Seibu Tamako Line and Seibu Haijima Line, and is surrounded by a quiet residential area with convenient transportation access. It was divided into an east side and a west side with a Tokyo Metropolitan Government park and condominiums in between, but the west side site was discontinued at the end of FY2021.

Educational Environment

Higashimurayama Danchi has been developed as a hands-on learning farm (Higashimurayama Suburban Garden) for kindergarten students, children, and students of affiliated schools. Every year, the farm is used as part of educational activities to grow and eat vegetables such as sweet potatoes, radishes, and potatoes.

Outline of Tateyama Danchi

Current Status of the Site

Tateyama Danchi is located in Tateyama City at the tip of the Boso Peninsula. The northwest side of the site faces the shore of Tokyo Bay, and the southeast side borders private land (fields).

Educational Environment

The Tateyama Complex includes the Wangan Biological Education and Research Center (laboratory and accommodation buildings), which is a seaside laboratory affiliated with the Faculty of Science, the Tateyama Outdoor Education Facility, which is a facility for extracurricular activities that can accommodate students, and staff housing. The Wangan Biology Education and Research Center has experiment and training facilities and accommodations along the coast and is used for various practical training and research related to marine life, as well as for graduate and doctoral research.

*Summary of each complex as of May 1, 2021

4 Environmental Consideration Plan

The University formulates an action plan for each fiscal year based on the five basic policies of "promotion of energy conservation", "effective use of resources", "prevention of leakage of hazardous substances", "promotion of environmental activities and development of environmentally aware personnel", and "accountability to society and dissemination of information", and promotes environmental consideration initiatives. Below is our action plan for FY2021 and our self-evaluation of our implementation of the plan.

1. Promotion of Energy Conservation

Issue	Action Plan	Evaluation	Reference Page
Reduction of Energy Consumption / Reduction of Greenhouse Gas Emissions 	We aim to reduce energy consumption per unit of production by at least 1% annually across the university. We implement energy conservation measures based on an energy conservation check list. We continue to systematically replace LED lighting and aging air conditioning equipment as a measure against global warming. Newly installed equipment is and will continue to be energy-saving or high-efficiency equipment.	△	P. 11 P. 13
	We were unable to reduce energy consumption by more than 1% compared to the previous fiscal year. Increased energy consumption due to the resumption of face-to-face classes is considered to be a factor.		
Energy Conservation Awareness 	Monthly utility consumption is published on our website to allow visualization of energy consumption. We continue to post various energy conservation related notices to educate students, faculty, and staff about energy efficiency and conservation.	○	P. 11

2. Effective Use of Resources

Issues	Action Plan	Evaluation	Reference Page
Reduction of Drinking Water Consumption / Reduction of Wastewater Consumption 	We continue to promote the installation of water-saving fixtures and onomatopoeic privacy devices when renovating toilets. We monitor water consumption in each building and work to promptly detect leaks. We continue to promote installation of rainwater harvesting and infiltration facilities.	○	P. 12
Reduction of Paper Consumption 	We continue to promote paperless meetings by using digital materials.	○	P. 12
Reduction of Waste Emissions 	We promote the reuse and efficient utilization of resources on campus. We promote recycling of resources by thoroughly separating and collecting waste.	○	P. 13 P. 16

3. Preventing Leakage of Hazardous Substances

Issues	Action Plan	Evaluation	Reference Page
Prevention of Leakage of Chemical Substances 	Chemicals are properly managed and disposed of in accordance with the Chemicals Management Manual. We hold training sessions for graduate students and faculty members on the use of chemical management software. For undergraduate students, a faculty member explains the handling of chemicals before each experiment.	○	P. 14 P. 15
Prevention of Leakage of Hazardous Substances 	We continue to properly remove and dispose of building materials containing asbestos.	○	P. 15

4. Promotion of Environmental Activities and Development of Environmentally Aware Personnel

Issues	Action Plan	Evaluation	Reference Page
Promotion of Environmental Preservation Activities 	We continue to make efforts to beautify our campus' environs by thoroughly separating trash, cleaning up regularly, pruning trees, etc. We encourage student-led environmental activities.	○	P. 16 ～P. 19
Promotion of Environmental Education and Research Activities 	Through environmental education, we encourage students at all levels to become interested in environmental issues.	○	P. 20 ～P. 24

5. Social Accountability and Information Dissemination

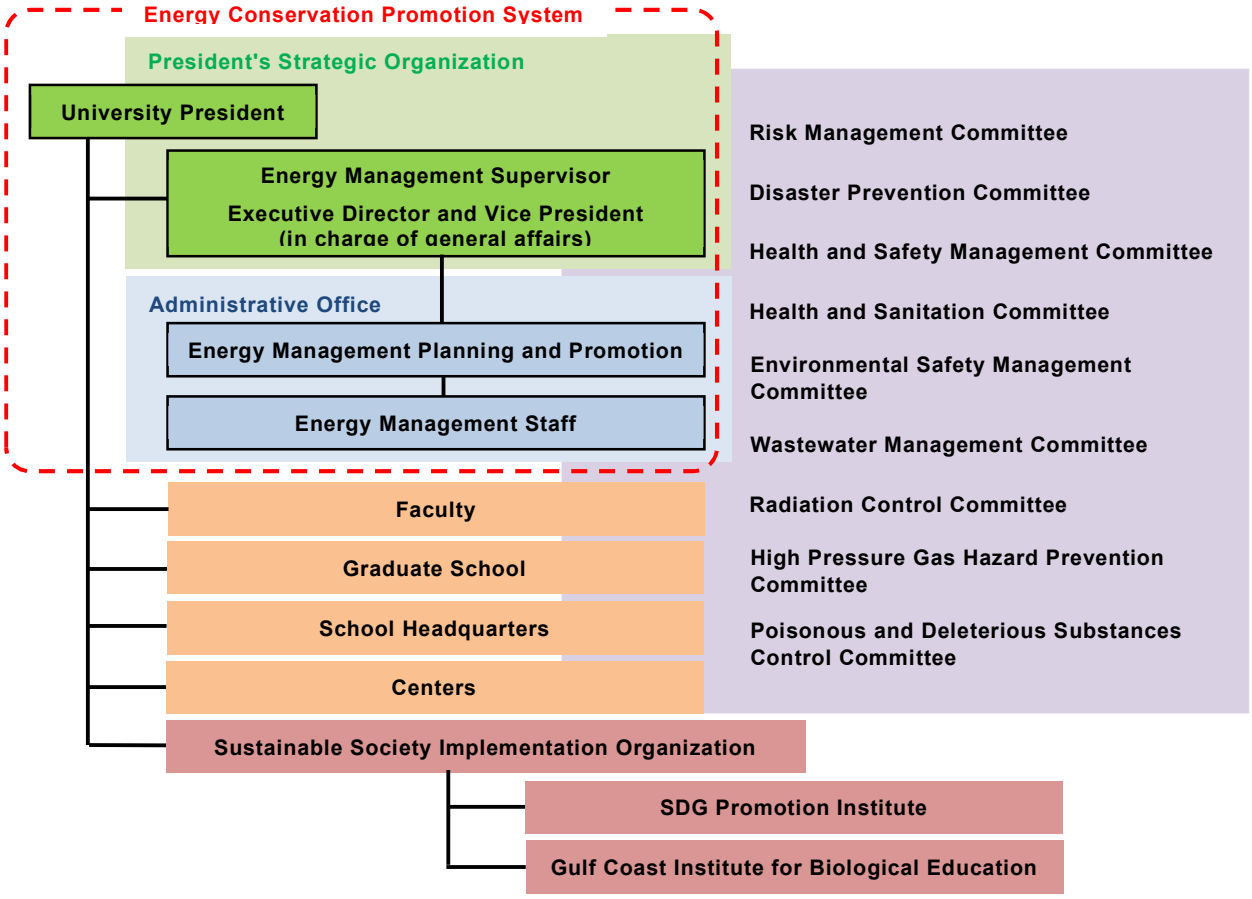
Issues	Action Plan	Evaluation	Reference Page
Dissemination of Information Inside and Outside the University 	We continue to publicize our environmental policy and approach both inside and outside the university. Self-assessment of the results of our efforts is ongoing and continues to be made public both inside and outside the university.	○	P. 1 ～P. 9

【Evaluation】 ○ Targets achieved △ Targets not yet achieved but showing a good improvement trends
× Insufficient effort

5 Environmental Management Organization Structure

To ensure the implementation of our plans for environmental consideration, the university has implemented an environmental management organizational structure under the leadership of the President, as shown in the figure below. Each committee is responsible for cross-organizational review and implementation of plans regarding various environmental issues within the university. Faculty members and administrative staff from the university's faculties, graduate schools, and affiliated schools have been appointed as members of each committee, and the entire Ochanomizu organization is working on environmental issues.

In FY2022, the SDGs Promotion Institute and the Gulf Coast Institute for Biological Education were newly established under the Sustainable Society Implementation Organization.



Sustainable Society Implementation Organization

The creation of a sustainable society requires that society as a whole promote the achievement of the SDGs. We have newly established this organization in order to develop human resources for this purpose, and will plan and implement SDG education and research programs. By building a research and innovation center for solving urgent social issues and promoting cutting-edge research that transcends the boundaries of the humanities and sciences, we aim to realize a sustainable society in which no one is left behind, which is the principle of the SDGs.

SDG Promotion Research Institute

The SDG Research Institute is organized by researchers in the fields of life science, life and environment science, gender studies, and nutrition education, which are characteristic of this university, and promotes research aimed at contributing to a sustainable society. In addition to the development of an SDG integrated education program from early childhood by taking advantage of the fact that affiliated schools are located on the same campus, the institute aims to support activities through joint research and internships with companies, local governments, and other organizations.

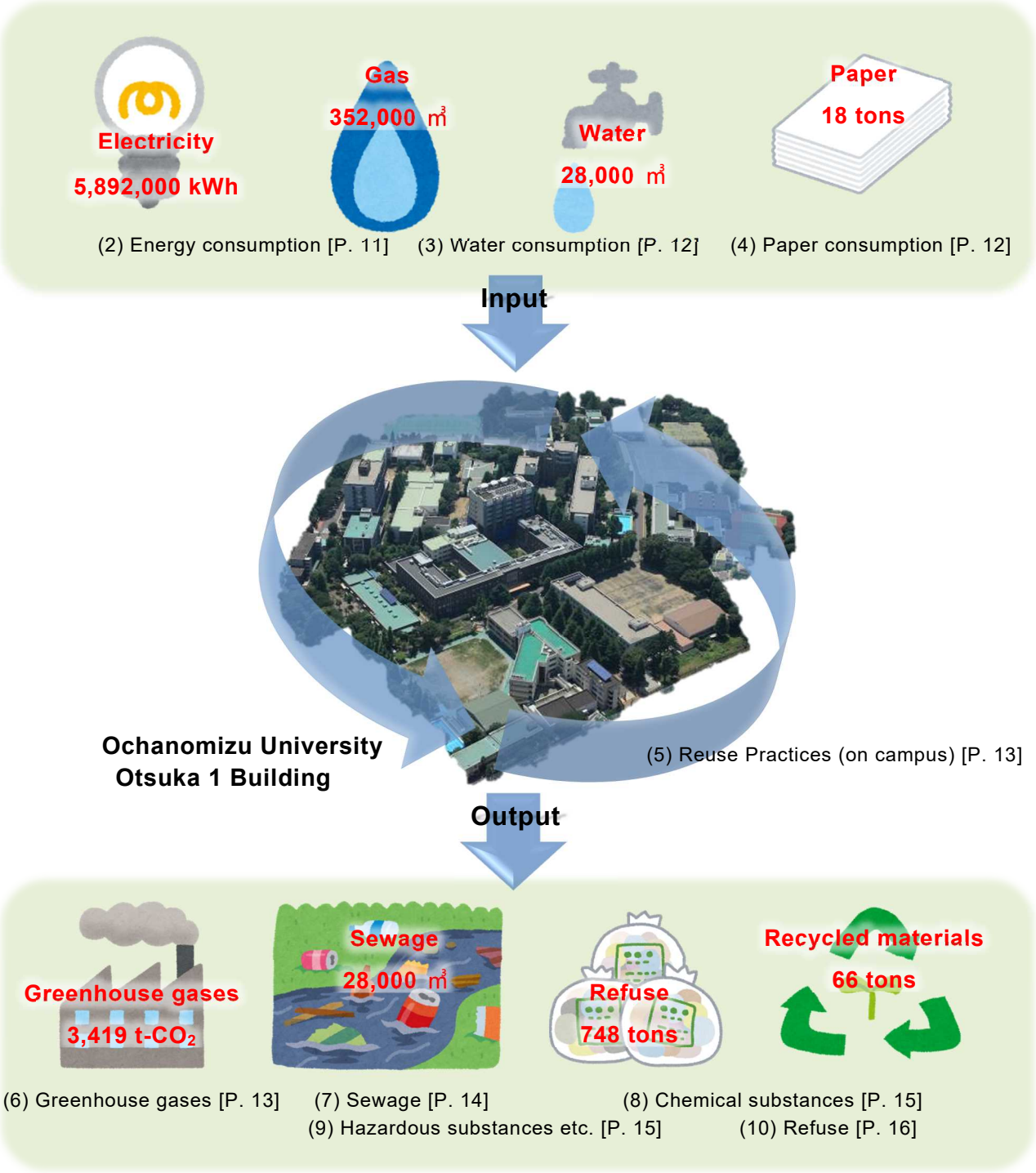
Gulf Coast Institute for Biological Education

This institute's goal is to promote research of and education about biology and the environment of the Gulf region and to deepen society's understanding of natural sciences and the environment through educational activities both in the field and in the classroom. The Center will promote research on the development, evolution, ecology, and conservation of plants and animals inhabiting a wide range of environments from the intertidal zone to the deep sea.

(1) Material Flow

Material flow is the grand total of the amount of resources consumed, the flow of resources within an area, and the amount of resources discharged from an area within a fixed period of time. The first step in creating a reuse-oriented society is to understand the quantity of resources we extract, consume, and dispose of.

The following is an overview of the material flow of the Otsuka 1 Building (Otsuka Campus) in 2021.

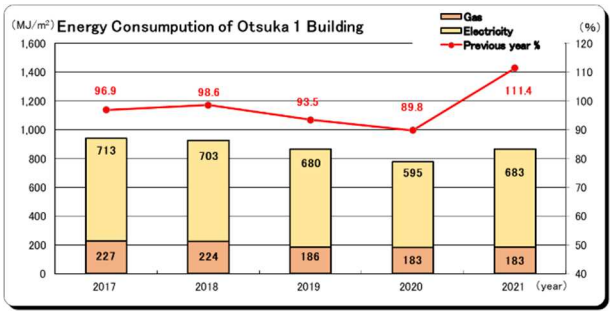


(2) Energy Consumption

Energy Conservation

In 2004, Ochanomizu University implemented the "Ochanomizu University Energy Management Guidelines" and has been promoting energy conservation on campus by carrying out energy management more effectively. The "Ochanomizu University Energy Management Guidelines" are written based on the "Laws Concerning the Appropriate Usage of Energy (Energy Conservation Laws)" and has a yearly goal to "reduce energy consumption* by 1% or more compared to the previous year". (*Energy consumption is defined as the amount of energy consumed based on the area of each respective building.)

Energy consumption of the Otsuka 1 Building in 2021 increased by approximately 11% compared to the previous year, as expected. During the coronavirus pandemic in 2020, the usage of lighting and air conditioning was reduced due to remote conferences and online classes. However, energy consumption increased in 2021 as the resumption of face-to-face classes encouraged the frequent use of lighting and air conditioning.



* The calculation standard for energy consumption intensity is Based on reference [10]

【Energy Conservation Practices (2021)】

Energy conservation measures were implemented based on the energy conservation checklist in the "Ochanomizu University Energy Management Guidelines". Specific examples are provided below.

- The air conditioners in lecture halls are set to turn off automatically in the event that someone forgets to turn them off.
- During the summer, the heated toilet seats in restrooms and electric water boilers in the kitchen are switched off.
- The adjusting of blinds and curtains is encouraged to reduce the use of electric lighting and air conditioning.
- During lunch breaks, all lighting in offices and other rooms is turned off.
- During sunny days, lights near windows are turned off.

In each building, old air conditioners have been replaced with high-efficiency air conditioners and LED lighting fixtures have been installed.

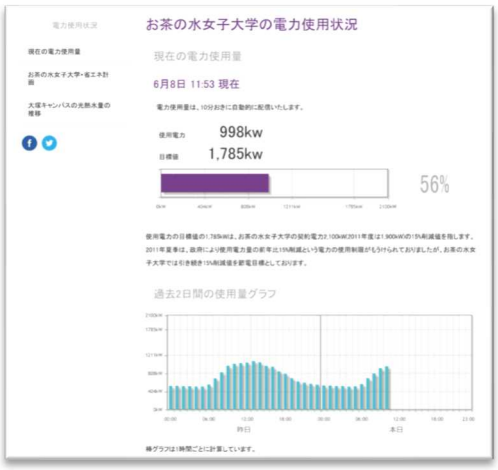
Energy Conservation Awareness

Besides installing energy-saving electrical appliances, it is important to raise the awareness of students and faculty members to achieve effective energy conservation. Together with energy conservation efforts, the university is working to raise awareness about energy conservation among students and faculty members.

【Practices Related to Energy Conservation Awareness (2021)】

Comparisons of the monthly and yearly consumption of electricity, gas, and water are recorded in graphs and published on the university website. In addition, real-time information on electricity consumption is disclosed to encourage energy usage visibility.

Ochanomizu University HP
<Electricity Consumption Status>
https://www.ocha.ac.jp/save_energy/index.html



In order to promote energy conservation during the summer, when the use of air conditioners is at its peak, the university encourages all faculty members to take a week off (August 10th – 16th).

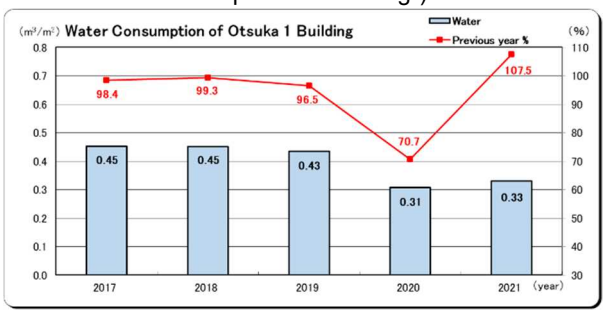
The following flyers were distributed and other measures have been implemented to raise awareness about energy conservation.

- Students, faculty, and staff are encouraged to dress lightly (Cool Biz campaign) during the summer.
- "2 Up 3 Down Campaign" flyers are posted near every elevator.
- Stickers to encourage energy and water conservation are pasted near switches and water faucets.

(3) Water Consumption

The university has been promoting awareness of water conservation by publishing monthly water consumption reviews on its website. Furthermore, when renovating restrooms, the university promotes the use of water-saving toilets to reduce the amount of water used for flushing. These efforts to conserve water are crucial as they create leeway for essential usages such as drinking water and hot water. They also reduce CO_2 emissions, which cause global warming. And, thereby, these measures contribute to the protection of the environment.

The water consumption* of the Otsuka 1 Building in FY2021 increased by approximately 8% compared to the previous year, as expected. During the coronavirus pandemic in 2020, the use of restrooms was reduced due to remote conferences and online classes. Water consumption increased in 2021 as the resumption of face-to-face classes necessitated increased use of restrooms. (*Water consumption is the amount of water used based on the area of each respective building.)



*The calculation standard for water consumption is based on reference [10].

【Initiatives to Reduce Water Consumption/ Sewage Discharge (2021)】

Water meter readings in every building are taken weekly to monitor changes in water usage. By doing so, it is possible to detect leakages early and fix the problems promptly. In 2021, there were no major water leakages in any of the buildings.

During the renovation of the Faculty of Science Building No. 1 (west side), rainwater infiltration pipes and rainwater infiltration trenches were installed to reduce sewage discharge. By reducing sewage discharge, the amount of energy used to treat wastewater at the sewage treatment facility is reduced, which in turn reduces greenhouse gas emissions.

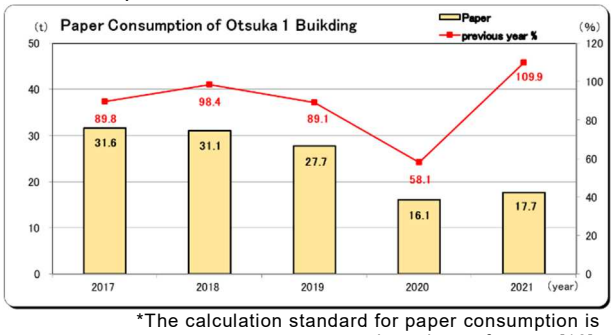
When the new student dormitory (Otowakan) was constructed, new rainwater infiltration pipes and rainwater infiltration trenches were installed to reduce the amount of sewage discharge that flows into the public sewage system. Additionally, rainwater storage tanks were installed outdoors and are used for watering outdoor greenery.

Rainwater storage tank

Rainwater infiltration pipe and rainwater infiltration trench

(4) Paper Consumption

During the 3rd Medium Term Goals and Plans, the university encouraged everyone to “go paperless by using digital files during meetings” to reduce the amount of paper purchased and to streamline administrative work. The amount of paper purchased in FY2021 was approximately 10% higher than that in the previous fiscal year. During the coronavirus pandemic in 2020, the use of digital files was promoted due to the implementation of remote conferences and online classes. Thus, paper consumption increased in 2021, as expected, due to increased distribution of paper materials with the resumption of face-to-face classes.



*The calculation standard for paper consumption is based on reference [10].

【Efforts to Reduce Paper Consumption (2021)】

The following initiatives were implemented to reduce the amount of paper purchased.

- PDF documents for various meetings were made available for viewing on tablets and other devices to promote paperless meetings.
- The distribution of paper materials has been reduced by using electronic bulletin boards.

Electronic bulletin boards

(5) Reuse Practices (on campus)

The university strives to reuse and allocate resources effectively by implementing the following initiatives to reduce the amount of waste generated.

- Furniture (desks, chairs, lockers, etc.) that is no longer needed is stored in a common storeroom on campus and saved for future use.
- The university is effectively promoting the reuse of older items by advertising used electrical items (computers, printers, etc.) through bulletin boards and the campus groupware system.
- Reusable equipment from previous renovation projects are stored and reused for other renovation projects.
- A “help yourself” corner has been set up in the library to provide visitors with materials that are no longer necessary to the library. These materials include duplicate titles that are held by the library, books that are due to be disposed of because of outdated content, journals that have exceeded their retention periods, books donated by publishers or authors that cannot be displayed in the library and so on.

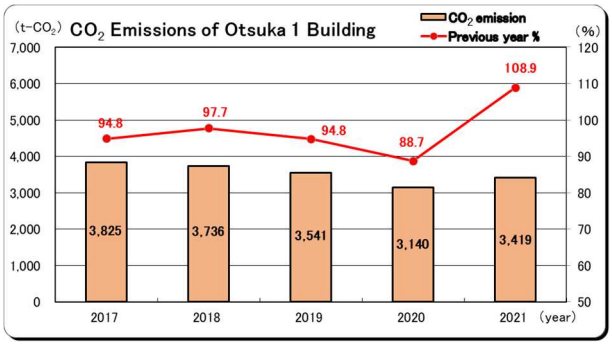
Reusable equipment storage

Help yourself corner

(6) Greenhouse Gases

Reduction of CO_2 Emissions

During the 3rd Medium Term Goals and Plans, the university aimed to “reduce 17% of the greenhouse gases by 2021” in order to promote energy conservation. The CO_2 emissions from Otsuka 1 Building in FY2021 were approximately 9% higher than the previous fiscal year. While energy consumption decreased significantly in 2020 due to less frequent use of lighting and air conditioners as a result of remote conferencing and online classes during the coronavirus pandemic, energy consumption increased, as expected, because face-to-face classes is resumed in 2021.



*The calculation standard for CO_2 emissions is based on reference [10].

【CO_2 Emissions Reduction Efforts (2021)】

Fluorescent lighting fixtures were replaced with LED lighting fixtures.

Aged air conditioners were replaced efficient air conditioners. Moreover, timers were installed in ventilation equipment with high volume discharge to allow intermittent operation.

Old water boilers were replaced with efficient water boilers.

The buildings’ thermal insulation was improved by implementing the following changes. Improved thermal insulation in buildings will increase air conditioner efficiency in summer and winter, thus leading to energy conservation and reduction in CO_2 emissions.

- During the renovation of the Faculty of Science Building No. 1 (west side), insulators were installed on the exterior walls.
- During the renovation of the Faculty of Science Building No. 1 (west side), double-glazed windows were installed.

Fluorocarbons Leakage Prevention

Refrigerants used in air conditioners are a major cause of the greenhouse effect, and the leakage of refrigerants has a significant impact on global warming. In accordance with “The Laws Concerning the Effective Use and Proper Management of Fluorocarbons (Regulation Laws Regarding Fluorocarbons Discharge)”, the university strives to prevent fluorocarbons leakage by properly managing equipment that is equipped with fluorocarbons. The level of fluorocarbons emissions in FY2021 was 29t- CO_2.

(7) Drainage

The main drainage systems in Otsuka Campus are divided into the East Gate, West Gate, and South Gate systems, based on the discharge points into the public sewage system. In FY2021, nitrogen in the East Gate system exceeded the standard value for elimination in Tokyo's 23 wards.

Results of Drainage Water Quality Analysis (October 13, 2021)　　: Items Over Benchmark

Parameter	Standard Value	Result (East Gate)	Result (West Gate)	Result (South Gate)
Cadmium	≤ 0.03 mg/L	< 0.003	< 0.003	< 0.003
Cyan	≤ 1 mg/L	< 0.1	< 0.1	< 0.1
Organic Phosphorus	≤ 1 mg/L	< 0.1	< 0.1	< 0.1
Lead	≤ 0.1 mg/L	< 0.01	< 0.01	< 0.01
Hexavalent Chromium	≤ 0.5 mg/L	< 0.05	< 0.05	< 0.05
Arsenic	≤ 0.1 mg/L	< 0.01	< 0.01	< 0.01
Total Mercury	≤ 0.0005 mg/L	< 0.0005	< 0.0005	< 0.0005
Alkyl Mercury	Undetectable	Not detected	Not detected	Not detected
Trichloroethylene	≤ 0.1 mg/L	< 0.01	< 0.01	< 0.01
Tetrachloroethylene	≤ 0.1 mg/L	< 0.01	< 0.01	< 0.01
Dichloromethane	≤ 0.2 mg/L	< 0.02	< 0.02	< 0.02
Carbon Tetrachloride	≤ 0.02 mg/L	< 0.002	< 0.002	< 0.002
1,2-Dichloroethane	≤ 0.04 mg/L	< 0.004	< 0.004	< 0.004
1,1-Dichloroethylene	≤ 1 mg/L	< 0.02	< 0.02	< 0.02
Cis-1,2-Dichloroethylene	≤ 0.4 mg/L	< 0.04	< 0.04	< 0.04
1,1,1-Trichloroethane	≤ 3 mg/L	< 0.3	< 0.3	< 0.3
1,1,2-Trichloroethane	≤ 0.06 mg/L	< 0.006	< 0.006	< 0.006
1,3-Dichloropropene	≤ 0.02 mg/L	< 0.002	< 0.002	< 0.002
Benzene	≤ 0.1 mg/L	< 0.01	< 0.01	< 0.01
Selenium	≤ 0.1 mg/L	< 0.01	< 0.01	< 0.01
Boron	≤ 10 mg/L	< 0.1	< 0.1	< 0.1
Fluorine	≤ 8 mg/L	< 0.5	< 0.5	< 0.5
1,4-Dioxane	≤ 0.5 mg/L	< 0.05	< 0.05	< 0.05
Total Chromium	≤ 2 mg/L	< 0.2	< 0.2	< 0.2
Copper	≤ 3 mg/L	0.04	0.06	0.04
Zinc	≤ 2 mg/L	< 0.2	< 0.2	< 0.2
Phenols	≤ 5 mg/L	< 0.5	< 0.5	< 0.5
Soluble Iron	≤ 10 mg/L	0.13	< 0.05	< 0.05
Soluble Manganese	≤ 10 mg/L	< 0.05	< 0.05	< 0.05
Biochemical Oxygen Demand	< 600 mg/L	160	130	110
Suspended Solids	< 600 mg/L	98	53	290
N-Hexane Extractants	≤ 30 mg/L	12	3	8
Nitrogen	< 120 mg/L	150	39	99
Phosphorus	< 16 mg/L	14	3.1	9.1
Hydrogen Ion Concentration (pH)	5 .0< <9.0	7.6	6.6	8.9

Impact on the public sewage system due to nitrogen exceeding the standard value: High concentrations of nitrogen will reduce the treatment function of the Water Reclamation Center.

(No obligation to report the exceedance of standard values.)

(8) Chemical Matters

At this university, in accordance with the “Chemical Management Manual from National University Corporation Ochanomizu University”, all chemical agents are properly managed from purchase to disposal, based on the chemical management support system IASO R6, which was created by Kanto Chemical Co., Inc. and Tohoku Ryokka Kankyohozen Co., Inc.

At the IASO lecture, which is held once a year, the following is addressed: how to use the system; each relevant regulation and law, such as the Fire Service Law, the Industrial Safety and Health Law, the Chemical Management Law (PRTR, MSDS etc.); the attachment of barcode labels and their actual practical uses such as in the disposal of chemicals. In FY2021, because of Covid19, the lecture was held online, and many faculty members and students were able to attend. The latest version of this manual can be downloaded from the university’s website at any time.

Ochanomizu University Website, “Manual of Chemical Management”
https://www.ocha.ac.jp/archive/introduction/Yakuhin-Manual_7th.pdf

(9) Hazardous Substances

Asbestos

The University conducts surveys to determine whether or not building materials contain asbestos when they are being renovated or demolished. If the building materials do contain asbestos, they are removed and appropriately disposed of based on the relevant laws and regulations. In FY2021, as shown in the table on the right, a total of 6 cubic meters of building materials which contain asbestos were removed and disposed of.

Table The Removal and Disposal of Asbestos in FY2021

Building	Type of Construction	Area of Construction	Asbestos Level	Amounts of Asbestos Removed
Faculty of Science Building No.1	Renovation	Floor	Level 3 (floor tiles)	1 ㎥
Faculty of Science Building No.1	Renovation	Insulation	Level 3 (Heating Pipe Insulators)	5 ㎥

High-Pressure Gasses

The Committee of High-Pressure Gas Hazard Prevention plans and holds a lecture to teach faculty and students who will be in charge how to handle high-pressure gasses safely and the relevant regulations to prevent hazards. Inert gasses such as nitrogen and argon are managed in each laboratory by registering them with IASO. Combustible gasses such as hydrogen and oxygen are managed throughout the entire building.

Cylinder Storage for Hydrogen and Oxygen

Hazardous Materials

The University notifies the fire department about chemicals which are classified as “hazardous materials” or “small quantity hazardous materials” under the Fire Service Law and stores them in the designated “storage and handling area”. The type and characteristics of the chemicals (e.g., fire prohibited, water prohibited) are clearly indicated on the building where the chemicals are stored, and the laboratory doors are clearly marked with a contact number in case of an emergency.

Users is certified hazardous material handlers (Class A) and renew their certification as prescribed.

Notices at an Entrance

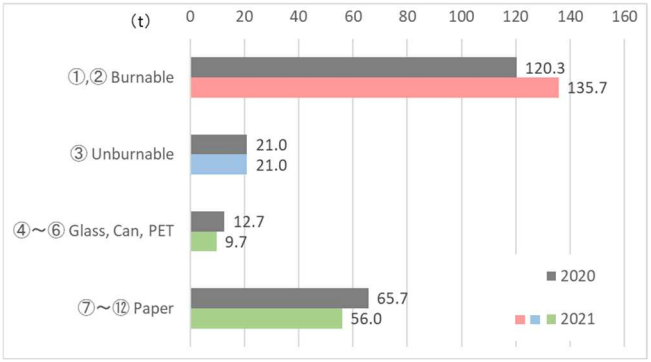
(10) Disposal

At Ochanomizu University, in order to advance the reduction of waste and increase of recycling, separate collection protocols are being strictly followed. Students are informed of these protocols through the “Campus Guide (a handbook for students)”. In addition, “The Plan for Reuse at Large-Scale Buildings” was made based on “The Ordinance Regarding Waste Disposal and Reuse in Bunkyo Ward”, and a decrease of waste emissions of 1% year-on-year is the goal.

The amount of waste emissions in the Otsuka 1 area has increased by about 1% year-on-year (the total amount of 1 to 12 in the figure on the right). Waste emissions at the Otsuka Campus in 2021 are as shown in the table below.

Moreover, we aim to use resources efficiently by collecting metal materials and electrical wires on the campus and selling them to the recycler.

Comparison of Waste Generation with Previous Year

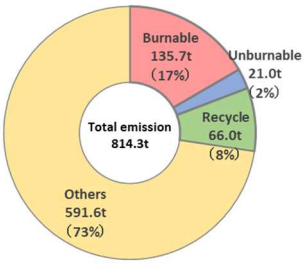


Recycling of Metal Materials

Recycling of Electric Cables and Copper Wires

Table List of Amounts of Waste Generated in 2021

No.	Type of waste	Subject	Type of disposal	Emissions (t)
1	Compost waste	Food waste, used tea leaves, etc.	Burnable	126.2
2	Paper	Fallen leaves, disposable chopsticks, etc.	Burnable	21.0
3	Plastic	Food packaging, cup noodle cups, plastic wrap, etc.	Unburnable	1.7
4	Glass	Drink bottles (glass), etc.	Recyclable	
5	Can	Drink cans (aluminum, steel), Food cans, etc.	Recyclable	3.5
6	PET	Plastic drink bottles, etc.	Recyclable	4.5
7	Used paper (OA paper)	Copy paper, OA paper, etc.	Recyclable	1.9
8	Used paper (Confidential documents)	Confidential documents	Recyclable	13.7
9	Used paper (Magazines)	Magazines, pamphlets, colored paper, etc.	Recyclable	24.3
10	Used paper (Newspapers)	Newspapers, flyers, etc.	Recyclable	1.6
11	Used paper (Cardboard)	Cardboard	Recyclable	9.2
12	Used paper (Mixed paper)	Shredder scrap, etc.	Recyclable	5.3
13	Recyclable electrical appliances	Electrical appliance	Recyclable	0.3
14	Scrap metal	Scrap metal, metal products, etc.	Other	210.2
15	Wood	Wood chips, wooden products, etc.	Other	44.0
16	Other mixed waste	Waste plastic, metal, etc.	Other	337.4



(11) Other

Environmentally Conscious Contract

Based on the "Law Concerning the Promotion of Procurement of Eco-Friendly Goods by Nations", Ochanomizu University formulates and announces the "Policy for the Promotion of Procurement of Eco-Friendly Goods" every year and the procurement of eco-friendly goods by following this policy is promoted. The table below shows the status of specified procurement items for FY2021. The policy goals were achieved for all items.

Table Status of Specified Procurement Items for FY2021

Type	Item	Total Amount Procured	Amount Specified for Items	Rate of Procurement
Paper	Copy paper	18,156.5 kg	18,156.5 kg	100%
Stationery	Office supplies, OA supplies	74,877 items	74,877 items	100%
Office Furniture	Chairs, desks, fixtures	842 items	842 items	100%
Imaging Equipment	Copy machines, ink cartridges	960 items	960 items	100%
Computers	Computers	882 items	882 items	100%
Office Equipment	Shredders, cell batteries	2,810 items	2,810 items	100%
Mobile Phones	Mobile phones	16 items	16 items	100%
Electrical Appliances	Refrigerators, microwaves	27 items	27 items	100%
Air Conditioners	Air conditioners	9 items	9 items	100%
Lights	Fluorescent lights	330 items	330 items	100%
Interior and Bedding Equipment	Curtains, duvets	246 items	246 items	100%
Work Gloves	Work gloves	486 items	486 items	100%
Other Textile Goods	Pipe tents, mops	824 items	824 items	100%
Systems	Online meeting systems	15 cases	15 cases	100%
Disaster Reserves	Drinking water for disaster reserves	3,393 items	3,393 items	100%
Procurement-Related Labor	Printing, cleaning, delivering	105,181 cases	105,181 cases	100%
Garbage Bags	Garbage bags	5,795 bags	5,795 bags	100%

Tree Management

In order to prevent dead branches from falling and to keep the campus environment safe, trees on campus are pruned regularly. In particular, trees along the perimeter of the campus are scheduled for pruning in relatively short cycles as there is a possibility of causing problems for neighboring residents. In addition, after stormy weather such as typhoons and heavy rain, there is a high risk of fallen trees and broken branches. The campus is patrolled by staff who prune and remove such hazards as soon as possible.

【Tree Management during FY2021】

In FY2021, pruning trees along the main traffic lines on the campus was more strongly focused on, as shown in the figure on the right.

The pruned branches were made into wood chips at a plant and spread on the soil surface around the trees. This is expected to suppress weeds and retain moisture, as well as reduce waste.

Chipping Brunches at the Plant

Spreading Chips of Pruned Brunches

7 Environmental Conservation Activities

(1) Campus Activities

Environment Beautification

Ochanomizu University has a nice green environment with gingko trees, cherry blossoms, hydrangeas, and azaleas, which remind us of the four seasons. If typhoons come or natural disasters occur, there are many fallen branches and leaves on the ground. Afterward, staff and contractors clean up our green spaces. Also, there are some harmful insects, so staff and contractors deal with them to keep the campus clean and safe.

Hydrangeas

Bicycle parking area

Only those who have a permit can park their bicycles on campus for the year. Staff check the parking area and if they find a bicycle without a permit, they inform the owner about the rule. If the owner ignores the caution, the bicycles are sold to be reused.

At the garbage station, garbage generated on campus is separated into cardboard, plastic, used paper, burnable trash, cans, PET bottles, batteries, and fluorescent light bulbs and picked by contractors. Large items that are no longer needed but can still be used, such as computers and other electronic equipment, are consolidated in one warehouse and picked up by a contractor to generate revenue for the university. Regardless of size or content, usable items are given to those who wish to use them through the university's "recycling bulletin board".

Garbage station

Industrial waste storage

(2) Attached schools

Affiliated Kindergarten: Activities to Protect the Environment

Before the second term, with the help of contractors (an alumni organization called Chigusa-Kai used to support these activities,but it no longer exists), weeds in the kindergarten's garden and playground are cleaned up. We leave some weeds in a specific area, so that the children can enjoy nature.

We ask parents to do some volunteer work to clean around the school facilities, including the roof. If the area is clean, the children can play more comfortably. Also, we hope that children can learn the importance of the environment by watching the adults' actions.

(3) Students' Environmental Activities

School Festival

Every year, we hold a school festival in November called “Kiin-sai”. The Festival Executive Committee, which is mainly composed of university students, asks festival-goers to separate garbage thoroughly, to use "eco-friendly containers", and to use "disposable chopsticks made from thinned wood", in order to make the festival eco-friendly.

Separation of garbage


Renewable bento container

Student Projects

■Sign project

This project aims to promote correct separation of garbage. It is planned and put into action acted by volunteer students. They designed new labels to prompt the correct separation of garbage and the introduce recycling boxes to encourage the reuse of used paper.

Garbage sorting display


Paper collection box

■Taking part in the Bunkyo Eco Recycle Fair

The Environmental Science Club, a student club at the university, has participated in the Bunkyo Eco Recycle Fair since 2006. The Bunkyo Eco-Recycle Fair is held by Bunkyo Ward, Tokyo. At this event, people introduce ideas for reducing waste at home, as well as environmental and 3R-related topics. The club introduces “science experiments which can be done with household materials” every year. In 2021, the club exhibited a "Molecular Model with Beads", a "Bean Pistol with Straw and Tissue", and "Paper Cups that Draw Near When You Blow on Them”.

■Reusing second-hand textbooks

STUDY FOR TWO (Ochanomizu University branch) started its activities in 2012. The group collects donations of textbooks and books no longer used after graduation and resells them for about half the normal price. Of the profits 80% are used for educational support for children in Laos and Bangladesh. Textbooks that are no longer needed are collected in 7 boxes on campus and a school dormitory, and sold in early April and October every year as a second-hand textbooks.

Donation of unnecessary textbooks


Sale of used textbooks

■Protection Activities

A team from the university takes part in a project to protect rows of Diego trees in the Amami Islands. This project was established by a company called “Kikaze”, which takes care of the Diego trees. The company’s activities meet the concept of the SDGs. It promotes regional revitalization by developing a product which uses the oil form the trees and the profits are used for their protection. Students participating in this project study the extraction of the oil. We have been working with Kikaze since 2021, and in 2022, master’s students visited Amami Island from March 14th to 17th, and successfully got some leaves and oil form the trees.

8 Education for Environmental Conservation

(1) University Commission

Endowed Courses by The Mitsubishi UFJ Environment Foundation

Endowed courses by The Mitsubishi UFJ Environment Foundation started in1994. At that time, it was clear that Japanese environmental lessons or studies were few and out of date compared to those of other countries. This series of lectures provides students with their first basic knowledge about environmental problems. The Foundation has given lessons at many public and private universities and these lessons have been held at Ochanomizu University since 2021.

Ochanomizu University has a special educational program called “Liberal Arts for the 21st Century” for B1-2 students. Providing multifaceted courses helps students develop a broader point of view, problem-solving abilities, and the skills they need to think critically. Courses in this program include lectures, discussions, presentations, experiments, and training. One of its themes is “Life and Environment”. Students who are to thrive in the 21st century need to understand the relationship between people and the environment, and to find a way to live in an eco-friendly manner.

The details of this program are presented below.

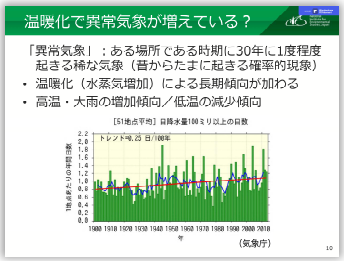
1. Endowed Course by The Mitsubishi UFJ Environment Foundation:
Liberal Arts for 21st Century Life and Environment, Series 7: “Life and Environment”
Associate Professor Toyohiko Nakakubo (Faculty of Life Science, Human and Environmental Sciences)
Professor Yoko Fujiwara (Faculty of Life Science, Food Nutrition)

Environmental problems cannot be easily solved simply by the development and introduction of innovative technology. We need to find solutions from a wide range of perspectives, such as the introduction of technology, the implementation of rules, and the establishment of a social system. Therefore, efforts to address environmental issues must work as two wheels of a cart: one to draw scenarios for solutions and quantitatively evaluate them (quantitative evaluation) and the other to implement the drawn scenarios in society (social implementation). In the Ministry of the Environment's Fifth Basic Environmental Plan (April 2018~), embodying and creating regional recycling symbiosis blocs is set as a policy goal. In this course, we will take up themes related to "food environment and organic matter circulation" and "creation of healthy water environment" for the creation of a regional recycling symbiosis zone, so that students can think and act on their own through learning both quantitative evaluation and social implementation skills. In addition, after the Great East Japan Earthquake, it became a top priority to, as humans and as a society, become resilient and to cope with frequent occurrences of natural disasters, including large-scale natural disasters, such as the Tokyo Underground Earthquake and Nankai Trough earthquakes. This course covers themes related to "natural disasters and living environment" and provides an opportunity to discuss and think about what future efforts are necessary.

2. Endowed Course by The Mitsubishi UFJ Environment Foundation:
Liberal Arts for 21st Century Life and Environment, Series10: “Environmental Problems and Society”
Associate Professor Naoko Hasegawa
(Faculty of Letters and Education, Department of Human and Social Sciences, Geography Course)
Professor Masao Kotani (Faculty of Life Science, Department of Human Life Studies)
Professor Yoshihito Mori (Faculty of Science, Department of Chemistry)

In the society in which we live, the social structure is based, in part, on various scientific findings. Our society can be called a "highly scientific society" that greatly enjoys the fruits of science and technology and that considers scientific knowledge a valuable common property. Thus, science and technology issues are not unique problems that only a few specialists are concerned with but are issues that all citizens have a deep

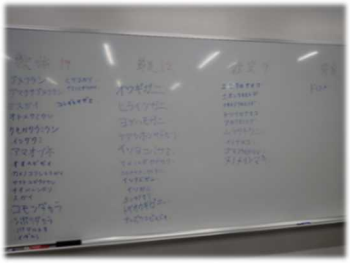
relationship with. In particular, environmental problems cannot be solved with only the scientific knowledge that already exists. Tackling such problems requires not only a great deal of new scientific knowledge, but also the application of current scientific knowledge and the establishment of a strong social structure. This course is not intended to provide students with comprehensive knowledge of environmental problems but rather to provide them with examples of individual problems. This course aims to provide students with an opportunity to learn about the uncertainties in science related to environmental issues, the relationship between science and society, the conflicting interests that arise within that relationship, and the social decision-making process regarding science and technology. Through learning these things, we hope that students will develop an understanding of the larger structure of society regarding environmental issues and think about collective decision-making regarding environmental issues that are still unresolved scientifically. The purpose of this course is to provide an opportunity for each student to think about how to make collective decisions on environmental issues, which are often not well understood scientifically. This lecture is divided into two parts: an overview of the topics above (at the beginning and end of the lecture) and a discussion of a particular theme from various perspectives. The topics for this lecture are the novel coronavirus infection and global warming. This course is a lecture, but at the end of each class, as much time as possible will give time for students to think and discuss by themselves, so that students can build a foundation to think and act on their own when they enter society in the future.



Endowed Course by The Mitsubishi UFJ Environment Foundation:
Liberal Arts for 21st Century Life and Environment, Series 23: “Marine Pollution and Biodiversity”
Professor Masato Kiyomoto (Faculty of Science, Department of Biology)
Professor Satoshi Washida (Faculty of Science, Department of Physics)

In this training course, students will experience the marine environment and get in touch with marine creatures through fieldwork both during low tide and offshore. For example, sea urchins, sea fans, and turban shells found on the beach may have been born far away and washed up here on the Japanese coast. The goal of this course is to understand the process of maintaining marine communities throughout their dynamic life histories, which naturally make good use of the marine environment. As each student finds various marine creatures, we will encourage them to consider creatures’ evolutionary phylogenetic relationships. We will also examine the processes that led to the current state of the oceans from the perspective of Earth’s long history. Furthermore, based on the development of student’s understanding of the marine environment through experience, we will consider the impact of human activities on the oceans. The characteristics of chemically stable seawater and ocean acidification due to increased carbon dioxide will be examined, and the effects of ocean pollution on organisms will be studied using sea urchin embryos and larvae. We aim to examine environmental issues more deeply and accurately from a bio-scientific perspective, based on the dynamic processes that maintain our current ecosystems, and while considering the historical processes that led current issues.


Observation and collection of coastal organisms during low tide


Identifying collected organisms in a picture book


Observing sea urchin fertilization and development

Ochanomizu University 2022 Symposium × SDGs

Ochanomizu University Initiative to Promote SDGs

Professor Yoko Fujiwara (Faculty of Life Science, Food Nutrition)
Associate Professor Toyohiko Nakakubo (Faculty of Life Science, Human and Environmental Sciences)

On January 31, 2022, a symposium consisting of two parts (lectures and poster presentations), was held online. During the first part, we invited Dr. Kei Gomi from the National Institute for Environmental Studies (NIES) Fukushima Regional Collaboration Research Center. He made a presentation on "Sustainable Regional Development Utilizing SDGs and Decarbonization". During his lecture, he discussed the concept of SDGs, how to build a regional environmental plan that follows SDGs, and the practice of regional development in Fukushima after the earthquake. Professor Yoko Fujiwara of Ochanomizu University then introduced "SDG initiatives at Ochanomizu University" from the perspectives of both past efforts and future developmental plans based on the establishment of the SDGs Promotion Institute. These presentations provided an opportunity to exchange practical knowledge from the standpoints of both the local community and the university. In the second part of the symposium, a poster presentation session was organized for the purpose of discovering new ideas related to the SDGs and exchanging opinions. A wide range of presentations were registered by researchers, graduate and undergraduate students, and high school students at the university, and 25 posters were presented (using the online tool Remo). The event provided a valuable opportunity to communicate beyond the major and discussions on topics such as biological resource production, improving the efficiency of chemical processes, food and the environment, gender issues, child rearing, urban development, and water treatment were had.

(2) Initiatives at Affiliated Schools

Affiliated Kindergartens – Introduction of Environmental Experiences –

Considering the Environment through the Fruits of the Schoolyard -2-

There are several kinds of fruit-bearing trees in the kindergarten's schoolyard. In the Environmental Report for FY2021, we covered bamboo shoots, *ume* (Japanese plum), and *chionomi* (Japanese white radish). In this report, we will introduce the relationship between summer oranges and children.

1. Children are fascinated with picking summer oranges

During the second semester, the small oranges gradually grew larger and larger. Around mid-November, the oranges suddenly became quite large but were still green. The children's desire to pick them grew even stronger. So, remembering the tools used by the older children in the previous year, they created their own: They cut bamboo stems under the supervision of their teacher, cut off the branches, and attached a wire loop to the end of the bamboo; they were ready to go.

The teacher and the students decided on a target orange, hooked it in the loop, and pulled hard. It was not easy to pick, but the teacher respected the children's feelings and suggested that they share the orange with everyone in the kindergarten. The students tried it and found that it tasted very sour. Everyone looked at each other and laughed.

Every day, they picked and ate oranges. The students got better and better at picking oranges, and they get a lot of them, which they used to play games like playing house or "*Kaoriya-san*" (perfume shop).

In April, which is the beginning of the school year in Japan, students who formed the new senior class took over the tools. Since they had to begin picking oranges in the middle of the year, they continued by picking the summer oranges from high places, either by standeing on tables or by connecting bamboo stalks to make them longer. They ate what they picked. As the students repeatedly picked the oranges, they found that the oranges become fresher and sweeter over time, and the children enjoyed the gradual changes in their taste.

At the end of May, the older children had an event called the "Parent-Child Play Day". Parents and children used long pruning shears to pick the summer oranges that were left in high places on the tree. They ate them on the spot or took one home each. The childrem were able to share the bounty of the garden with their families. They were grateful for the summer oranges and hoped that this environment will continue to be shared with with children in the future.

2. Swallowtail larva

Some students want to sow summer orange seeds, and Mr. A was one of them. One day, his friend found swallowtail butterfly eggs on the seeds. Mr. A said, "No, I sowed them for eating, so I will not allow swallowtail butterfly larvae to eat the leaves". The homeroom teacher and his friends were surprised, but they understood his feelings. So, It was suggested that Mr. A could continue to carefully grow the seedlings, one to eat and one for the swallowtail butterfly. Even now, swallowtails come to lay their eggs every year. We wonder how many will leave the nest this year.

Affiliated High School
- Introduction of Environmental Classes -

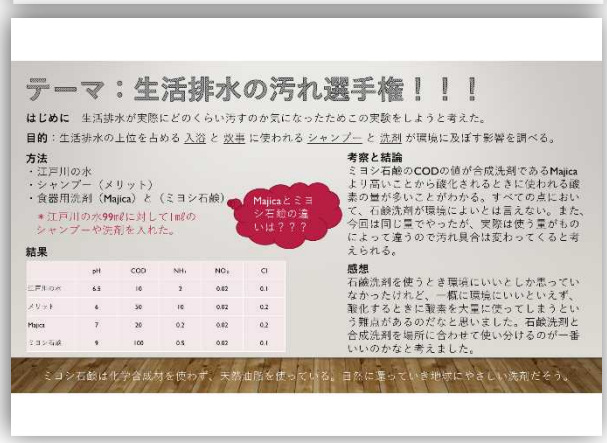
First Year
Required Subject Research Basics

■ Each group conducted a water quality survey on a theme decided by the group using the Kyoritsu Institute of Physical and Chemical Research's pack test, then created a poster and made a presentation. Students learned about water quality in rivers and ponds and the impact of domestic wastewater on the environment in an exploratory manner.

Examples of themes:

"Differences in river water quality by region"

"Domestic wastewater pollution championship!"



First Year
Required Subject Geography A

■ Environmental issues were studied as global issues. Students learned about air pollution, the destruction of tropical forests, desertification, and global warming, and they discussed how to create a sustainable society. Afterwards, the students submitted the results of their studies to the Global Environment Essay Prize sponsored by Chuo University (one student won the prize for excellence, and another student also won a prize). The students have entered the Global Environment Essay Prize sponsored by Chuo University for seven consecutive years, and have received the school prize four times.

In the course of dealing with global issues, such as population, food, housing, urbanization, resources, and energy, students learned that these issues are intricately intertwined with environmental issues.

■ In the mapping unit, the itai-itai disease was put forward as an example of using maps to solve the problem of pollution from an epidemiological perspective.

■ In the unit on climate, students considered anthropogenic influences, such as fossil fuel consumption and deforestation, as factors that contribute to climate change.

■ In the unit on life and culture around the world, environmental issues were discussed as an issue to be addressed from a regional perspective. As examples, we discussed air pollution in China, the destruction of tropical forests in Southeast Asia and South America, and desertification in Africa.

Third Year
Elective Subject Geography B

■ Environmental issues were discussed as they pertain to global issues, and their connection to resource and energy problems, population problems, and food problems were also considered.

Second Year
Required Subject Japanese History A

■ This course dealt with the policy of assimilation of the Ainu people, and considered how the transformation of their lifestyle and culture affected the environment.

■ The Ashio Mine Poisoning Incident was discussed, and students learned what kinds of environmental problems have arisen in the process of modernization.

■ The class discussed the four major pollution lawsuits that began during a period of high economic growth, and considered why the lawsuits concerning four different pollution-related diseases began when they did. The class considered why it took so long to enact the Basic Environmental Law, and thought about how to tackle the remaining issues by learning the history of development and the environment.

Third Grade Elective Subject
Japanese History B

- In dealing with the formation of the Japanese archipelago and the beginning of rice cultivation, students learned that changes in topography and food resources due to climate change had a significant impact, and thus gained perspective on the relationship between people's lives and the natural environment.
- By reading part of the book "Ise Jingu: Prayers Born from the Forest" (Kinokuniya Shoten), students learned about the relationship between the cutting down of shrine forests and frequent flooding in the early modern period, and considered the relationship between nature worship and religious norms and environmental conservation.
- Students learned that the Medieval Period, which is also called the Little Ice Age, was marked by frequent famines and abnormal weather due to cold damage. They considered the impact of this on society and government.
- In studying the Early Modern period, students learned that in Edo, urban planning was conducted to mitigate damage from large fires and that a waste-free lifestyle was established by utilizing the relationship with nearby rural areas. Based on this, students considered the elements that support the establishment of a sustainable lifestyle.

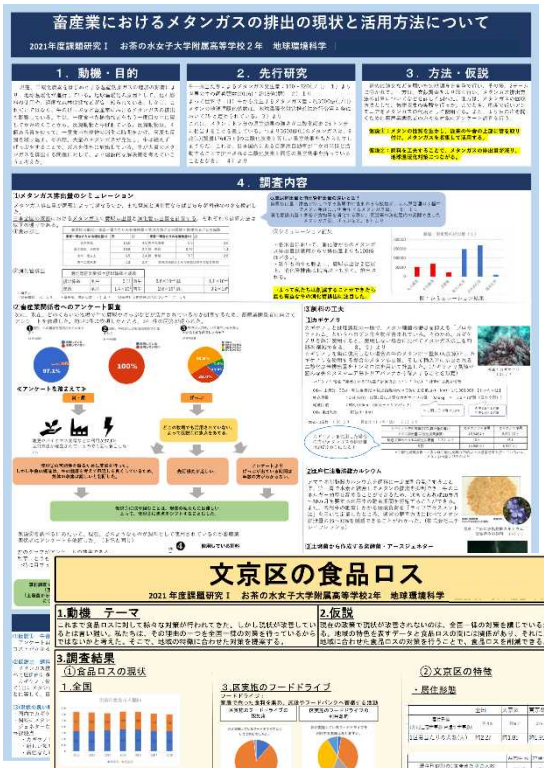
Second Year Required Subject
Research Ⅰ　Global Environmental Science

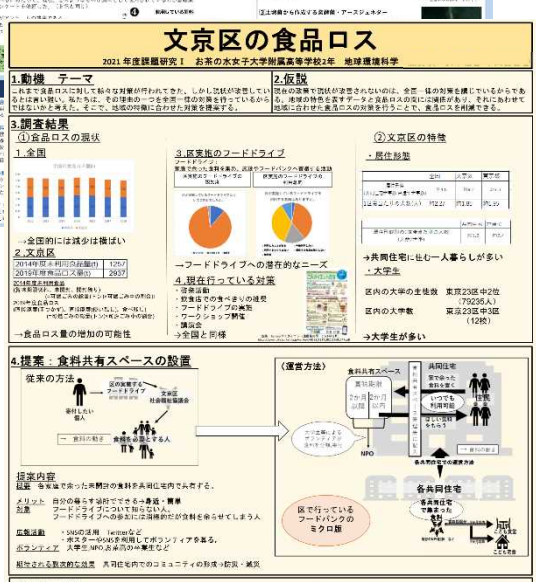
- Themes for research projects for this course included global warming, air pollution, energy resources, climate, and others. Examples of research themes for FY2021 are as follows.

  “The current status of methane gas emissions in the livestock industry and how it can be utilized.”
  (Participation in the Kyoto University Poster Session in 2021)

  "Food Loss in Bunkyo Ward”
  (Challenge!! Open Governance Semifinalist, sponsored by Tokyo University)

  “The Performance of Piezoelectric Elements and its Application Methods"
  (Finalist, SDGs Exploration AWARD2021)





First Year Required Subject
SSH Subject; Science in Life

- Students learned about science in everyday life with a focus on sustainability and ethics.
- Students practiced tie-dyeing bags made of organic material using a new type of environmentally friendly organic herb and tree dyeing.

First Year Required Subject
Comprehensive Home Economics

- In cooperation with an ethical brand, some time was spent on product development. This included practice in basic sewing of clothing. Excellent works were mass-produced at a factory owned by an ethical brand in Ghana, Africa (employing poor women and disabled people) and then sold in Tokyo. Ten percent of the proceeds were donated to support education in Africa. (For details, please refer to the "Ellipse" article in our school database.)
- Students learned about the Paris Agreement, SDGs, circular economy, food loss, ocean plastics, Amazon forest fires, and other environmental issues, and held discussions on environmental issues.
- First-year students teach a class on chocolate and child labor to fifth-year students at an affiliated elementary school every year.

Second Year Required Subject
Comprehensive Home Economics

- Classes on ethical consumption with consideration for the environment and human rights have been held since 2011. Students learn through hands-on experience and considering the results.
- Second-year students visit first-year students at an affiliated junior high school every year to give them a lesson on ethical consumption.

First ~Third Year Required Subject
Comprehensive Home Economics

- In cooking classes, 100% biodegradable eco detergent, microplastic-free cellulose sponges, and compost are used to dispose of food scraps. Eco-friendly cooking methods are used to minimize food loss and energy consumption while minimizing wastewater pollution.

9 Other

(1) Compliance with Environmental Regulations

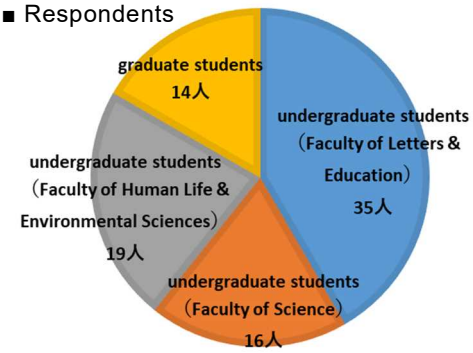
Laws and Regulations	Regulations of the University	University System	Compliance with Laws, Regulations, etc.
[Environment] ■Environmental Basic Law ■Environmental Consideration Promotion Act ■Environmental Contract Act ■Green Purchasing Law ■Environmental Education Promotion Act		Finance Section Facility Section	○
[Measures Against Global Warming and Energy Saving] ■Law Concerning the Promotion of Measures to Cope with Global Warming ■Law Concerning the Rational Use of Energy ■Law Concerning the Control of Freon Emissions	Campus Master Plan Energy Management Standard	Energy Conservation Promotion System Facility Section	○
[Water Quality and Soil] ■Water Pollution Control Law ■Sewerage Law ■Soil Contamination Countermeasures Law	Wastewater Management Regulations	Wastewater Management Committee Facilities Division	△ Exceeded effluent standard values (see p. 14)
[Air] ■Air Pollution Control Law		Facility Section	○
[Noise, Vibration, and Offensive Odors] ■Noise Regulation Law ■Vibration Regulation Law ■Odor Control Law		Facility Section	○
[Waste and Recycling] ■Waste Disposal and Public Cleansing Law ■PCB Special Measures Law ■Various recycling laws		Planning and Strategy Section (Crisis Management) Finance Section Facility Section	○
[Hazardous Materials and Chemical Substances] ■Fire Service Act ■Poisonous and Deleterious Substances Control Law ■Occupational Health and Safety Law ■PRTR Law	Poisonous and Deleterious Substances Control Regulations	Poisonous and Deleterious Substances Control Regulation Planning & Strategy Section (Crisis Management)	○
[Radioactive Material] ■Law Concerning Prevention of Radiation Hazards Due to Radioactive Isotopes, etc.	Radiation Hazard Prevention Regulations Regulations on Measurement and Control of Nuclear Fuel Materials,	Radiation Control Committee	○
[High Pressure Gas] ■High Pressure Gas Safety Law	High Pressure Gas Hazard Prevention Regulations	High Pressure Gas Hazard Prevention Committee Planning & Strategy Section (Crisis Management)	○
[Safety and Health] ■Labor Standards Law ■Labor Safety and Health Law	Safety and Health Management Regulations Environmental Safety Management Regulations	Safety and Health Committee Environment Safety Management Committee Human Resources and Labor Section	○

(2) Status of Response to Stakeholders

Environmental Survey for Students

We conducted an environmental questionnaire survey of undergraduate and graduate students in FY2021.

■ Respondents



■ Survey Results

Survey Questions	Response Rate (①②③④⑤⑥ / 0% 20% 40% 60% 80% 100%)
Do you think that environmental issues are urgent problems that we should tackle? 1. yes, very much 2. yes, a little 3. no,not really 4. no, not at all 5. don't know	
Do you think environmental problems can be improved through the awareness and actions of each and every one of us? 1. yes, very much 2. yes, a little 3. no, not really 4. no, not at all 5. don't know	
Do you think we should take environmentally friendly actions (energy saving, waste reduction, etc.) on a daily basis? 1. yes, very much 2. yes, a little 3. no, not really 4. no, not at all 5. don't know	
Are you concerned about environmental issues? 1. very much 2. a little 3. not very much 4. not at all 5. don't know	
Do you talk about environmental issues with your family and friends? 1. yes, often 2. yes, sometimes 3. not much 4. not at all	
Would you be interested in attending a lecture on environmental issues if it were offered? 1. yes, very much 2. yes, a little 3. no, not really 4. no, not at all 5. don't know	
Do you want to participate in environmental activities (volunteer work such as picking up trash, etc.) in the community or university where you have already taken a course on the "environment"? 1. yes very much 2. yes, a little 3. no, not really 4. no, not at all 5. don't know 6. already involved in environmental activities or have been in the past	
Are you aware of the SDGs (Sustainable Development Goals) in which you are already or have been involved? 1. yes, very aware 2. yes, a little aware 3. no, not really aware 4. no, not at all aware 5. don't know 6. already involved in SDG activities or have been in the past	
Do you think Ochanomizu University is making efforts to save energy? 1. yes, very much 2. yes, a little 3. no, not really 4. no, not at all 5. don't know	
Do you think Ochanomizu University is making efforts to save water? 1. yes, very much 2. yes, a little 3. no, not really 4. no, not at all 5. don't know	
Do you think Ochanomizu University is making efforts to reduce waste? 1. yes, very much 2. yes, a little 3. no, not really 4. no, not at all 5. don't know	
Do you think Ochanomizu University is lush and coexists with nature? 1. yes, very much 2. yes, a little 3. no, not really 4. no, not at all 5. don't know	
Do you think Ochanomizu University offers a good variety of lectures on the environment? 1. yes, very much 2. yes, a little 3. no, not really 4. no, not at all 5. don't know	

Do any of the following environmental issues interest you? (Multiple answers allowed)	interested 0% 20% 40% 60% 80% 100%
Climate change / global warming	
Energy issues	
Water resources	
Forest conservation	
Garbage・Ocean plastic	
Food loss	
Others	
None in particular	

Do you consider of environmental issues on a daily basis and do you act on them? Do you take any of the following environmental measures on campus? (Multiple answers allowed)	Takes 0% 20% 40% 60% 80% 100%
Turn off the lights when leaving a room for the last time.	
Turn off the lights during lunch break.	
Turn off the lights (on the window side) when daylight is sufficient.	
Turn off the air conditioner when leaving the room for the last time.	
Set air conditioner to 28°C for cooling and 20°C for heating.	
Refrain from using air conditioners during temperate times of the year (May, June, September, and October).	
Keep doors and windows closed while the air conditioner is in use. (Except for opening doors and windows for ventilation.)	
Set rooms with total heat exchangers to the heat exchange setting when air conditioners are in use.	
Use stairs instead of elevators when moving from one floor to another (1-3 stories).	
Take measures against the cold by covering the feet with a blanket, before using auxiliary heating equipment for the feet.	
Unplug unused equipment from power outlets.	
Refrain from using the lecture rooms for self-study alone and, use the assigned study rooms.	
Close the lid of the toilet seat. (Reducing power consumption by heated toilet seats.)	
Set PCs to power-saving mode.	
Turn off the computer monitors when away from seats.	
When using the toilet, use an onomatopoeic privacy device.	
When washing dishes, water is not left running.	
Separate garbage properly.	
Refuse plastic shopping bags when shopping at the Co-op.	

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