



Environmental
report
2024
abridged version



KOBE UNIVERSITY

Message from the president



FUJISAWA Masato, president

April 2005: Professor, Graduate School of Medicine, Kobe University
February 2014: Director, Kobe University Hospital
February 2018: Executive assistant to the president, Kobe University
April 2019: Dean, School and Graduate School of Medicine, Kobe University
April 2021: President of Kobe University

Kobe University is located in the port city of Kobe, surrounded by the natural beauty of the Rokko Mountains and the sparkling Seto Inland Sea. It is a leading comprehensive research university founded in 1902, with a long history and tradition. Since its establishment, the university has been committed to its mission of creating knowledge of universal value that sows harmony between academic principles and practical application and cultivates leading human resources with a rich sense of humanity through a spirit of sincerity, freedom, and cooperation.

The government has announced the goal of achieving carbon neutrality (CN) by 2050, by which time greenhouse gas emissions will be reduced to zero. With the whole country now working towards achieving CN, our university established the Carbon Neutrality Promotion Headquarters in October 2022 and is promoting a plan to tackle this issue across the university through education, research, facility development, etc.

Furthermore, the Office for Promoting SDGs established the CN Promotion Project in April 2022. This project will bring together CN-related research from across the university, create intellectual assets related to CN technology and build a system to add value to such assets.

In addition, Kobe University is participating in the Coalition for Achieving Carbon Neutrality (CN Coalition). The CN Coalition was established on July 29, 2021, as a platform for information sharing and dissemination by universities and other organizations that are either actively working to achieve carbon neutrality or considering strengthening

their efforts under the leadership of the Ministry of Education, Culture, Sports, Science and Technology, the Ministry of Economy, Trade and Industry, and the Ministry of the Environment. Of the five working groups (WGs) within the CN Coalition, we are participating in the Regional Zero Carbon WG and the Innovation WG. At the CN Coalition general meeting held on September 7, 2023, Kobe University became a new managing institution of the Innovation WG, together with Waseda University and Fukui University. We will contribute to the further enhancement of the functions and presence of universities in society and to the development of initiatives for achieving carbon neutrality, from universities to local communities, countries and the world, as well as to promoting more positive changes in society through the dissemination of the collective views of the universities involved.

Kobe University strives to be a global center for interdisciplinary collaborative research and education aimed at creating knowledge and developing human resources. It is important that all members of the university are aware of the need for reform and work together to promote collaboration and co-creation without pausing to ensure the university's continued development. We will create various new foundations for growth in basic and applied scientific research by mobilizing the university's untapped capabilities and hope to continue to develop as a research university that is sustainable, rooted in the local community and proud to be a world leader. We look forward to your continued support and cooperation.

Message from the director of the Center for Environmental Management



UCHINO Takashi, director of the Center for Environmental Management

Affiliation: Director, Kobe University Center for Environmental Management(2024 academic year)
Professor, Department of Chemistry, Graduate School of Science, Kobe University
Specialization: Synthesis and property research of semiconductors, magnetic materials, superconductors, and their composites

What lies beyond thought and imagination

Recently, newspapers have been full of articles about ChatGPT and other forms of generative AI. While these present some advantages, there are also concerns about issues such as copyright infringement, leakage of confidential information and deepfakes. In addition, there have been recent reports about the huge energy consumption of semiconductors in the process of building data infrastructure for generative AI. There are also concerns that the power consumption associated with technological innovation is progressing more than expected, which could have an impact on the government's energy strategy to promote decarbonization.

I don't intend to discuss the pros and cons of generative AI on this occasion. But it seems obvious that generative AI is unable to solve the complex problems that humanity currently faces, such as ethnic conflicts and environmental issues, and that the constant stream of human thought and

imagination for the future will remain indispensable. It is precisely because we live in such an age that the role of universities as centers of learning will become increasingly important in the future.

At the same time, educational and research activities at universities are no longer unaffected by environmental issues. Today, university faculty and administrative staff members are faced with the challenge of finding ways to overcome the apparent contradiction between promoting research activities and achieving energy conservation. This report summarizes the initiatives that our university is taking to solve this problem. The Center for Environmental Management is also striving to make a contribution to solving this problem, however small, through its daily activities. I am aware that there are many areas where our efforts are insufficient and I would be grateful if you could take a look at this report and offer your advice and encouragement.

Charter on the environment

Kobe University established a “Charter on the environment” on September 26, 2006 and carries out various environmental conservation activities based on its basic philosophy and policies. The environmental and energy saving efforts of the university are summarized in an annually publicized environmental report.

•Basic philosophy

As a world-class center for research and education, Kobe University endeavors to advance initiatives that address two crucial issues of our time: environmental conservation and the creation of a sustainable society.

This university is committed to building pathways towards the realization of a sustainable society, something that remains a shared goal for humanity. To do this, we are utilizing the local environment enclosed by mountains and oceans to cultivate capable individuals with an environmental awareness. We regularly publicize academic information from the cosmopolitan city of Kobe to the rest of the world and we are leading the way in environmental conservation efforts.

•Basic policies

1. Cultivation and support of individuals with a strong environmental awareness

A university’s greatest obligation is the cultivation of people. We continuously revise our educational programs in order to foster the development of individuals who are always conscious of the global environment and the impact of their behavior. By combining knowledge of the humanities, social sciences and natural sciences, and collaborating with global and local society, we strive to cultivate highly compassionate individuals who possess a thorough understanding of the environment.

2. Promotion of research to preserve and manage the global environment

It is necessary to consolidate the results of numerous research studies in order to overcome the various challenges facing the world, conserve the Earth’s environment and create sustainable societies. We promote research into environmental problems in individual fields as well as interdisciplinary research that combines related fields and strive to disseminate the results both locally and globally.

We also support efforts to produce research results that are strongly connected to advancing international society and local communities.

3. Taking a leading role in the promotion of environmental conservation activities

Each individual’s behavior is crucial for conserving the Earth’s environment. Through our daily activities, we protect the environment, make efficient use of energy and natural resources and rigorously manage dangerous substances, thus setting an example as an environmentally conscious campus. Furthermore, we disclose information about our environmental conservation activities, continuing to make improvements through communication with those involved.

Environment-related education, research and topics

Topics

FULL P.8

Environmental education based on the environmental report

Since 2014, some coursework has been based on environmental reports during classes in the subject “introductory environmental studies.”

“Introductory environmental studies” subject

Global environmental issues have become one of the greatest challenges of the century. Every year, the Center for Environmental Management offers an omni-bus-style environmental education course, “Introduction to environmental studies A and B,” as a university-wide common subject, taught by a diverse team of lecturers from various fields, drawing on the strengths of Kobe University as a comprehensive university.



Topics

FULL P.11

Reports of Carbon Neutral Promotion Headquarters

TAMAKI Hisashi, director, Carbon Neutral Promotion Headquarters

- (1) Carbon Neutral Promotion Headquarters symposium
Activities conducted to date were reported based on the three divisions : education, research and social co-creation, and campus.
- (2) Symposium on the comprehensive collaboration agreement for the promotion of a decarbonized society through a five-party agreement
A keynote lecture was given by SUZUKI Yoshiyasu, specially appointed professor at the Research and Development Center for Advanced Smart Technology, Kobe University, on “Approaches to energy-saving control of air conditioning using digital technology.”



Topics

FULL P.9

The activities of the Kobe University environment club Ecofull

On-demand lectures using original environmental *karuta* playing cards and other means
ONO Takashi, environmental planning coordinator,
Office of Safety and Health/Environmental Management

1. On-demand lectures at children’s centers
Aiming to teach children in a fun and natural way about the importance of valuing food and preserving the environment, we offer on-demand lectures on food loss and waste using original *karuta* game cards.
2. Poster production for “Environment month” (June)
Created with the intention of encouraging students and staff in university to view environmental issues from a broad perspective and framework
3. Presentation at a symposium on the comprehensive collaboration agreement for the promotion of a decarbonized society



Original *karuta* game cards

Education

FULL P.12

Workshop for formulating a carbon neutral strategy for a university campus

TAKEBAYASHI Hideki, associate professor, Graduate School of Engineering
YOSHIDA Naoto, project research associate, Carbon Neutral Promotion Headquarters

A workshop was held to discuss specific strategies for reducing CO₂ emissions based on the findings of a survey of the current state of equipment and facilities and an analysis of energy consumption at all buildings on the Rokkodai Campus of Kobe University. The workshop was held in collaboration with the Kobe University SDGs Promotion Office and the Carbon Neutral Promotion Headquarters, with the participation of the Kobe University Environmental Student Council.



Annual electricity consumption based on the usage of each building

Topics

FULL P.10

About the flea market hosted by the Co-op Student Committee

KUROIWA Shuhei, 1st year, Faculty of Economics,
Kobe University Co-op Student Committee

The flea market was held to provide an opportunity for Kobe University students to sell clothes, books and accessories that they no longer need, and to buy clothes at low prices. It was also held with the intention of reminding students of the importance of recycling and reducing waste. It was decided that the proceeds from the sale of items would be donated to the victims of the Noto Peninsula earthquake.



Calling out to potential customers



Poster promoting the flea market

Education

FULL P.13

Clothing and environmental issues

INOUE Mari, professor, Graduate School of Human Development and Environment

The United Nations Conference on Trade and Development states that the textile and fashion industries are the “second-most polluting industries in the world” after the oil industry, due to the fact that they account for 10% of all CO₂ emissions. The industry as a whole is trying to take urgent action. We hope that consumers will join in and think about the need to question and work towards realizing sustainable textile products in their everyday lives, which will hopefully lead to positive actions in their daily lives.



Example of an experiment used during the lecture

Education and research

FULL P.14

“Our SDGs 2023: Aiming for a recycling system for textile products” – The “enwecle” project

INOUE Mari, professor, Graduate School of Human Development and Environment

With the aim of creating value by turning textile waste into a new resource, in the spring of 2022 a group of university researchers in the Kansai region from the textile, living environment and design fields established the student-centered team “enwecle” project. In its second year, 2023, the project’s general theme was “Our SDGs 2023: Aiming for a recycling system for textile products,” and various events targeting consumers were held at venues such as the Annex of the Kyoto Museum of Traditional Arts and Crafts.



Research

FULL P.19

Research that addresses environmental issues and contributes to the creation of a sustainable society

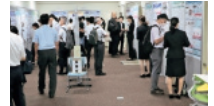
TABATA Tomohiro, associate professor, Graduate School of Human Development and Environment

OHNO Tomoko, associate professor, Graduate School of Human Development and Environment

MURAYAMA Rumiko, associate professor, Graduate School of Human Development and Environment

We held the “2023 Annual meeting of the Society of Environmental Science, Japan,” sponsored by the Society of Environmental Science, Japan, and co-sponsored by the Graduate School of Human Development and Environment at our university.

Researchers from various fields of science and the humanities gathered to contribute to solving environmental problems and building a sustainable society. They reported on highly interdisciplinary approaches and research results that transcend their specialized fields.



Research

FULL P.15

Measuring the physical properties and evaluating the texture of yarn and fabric made from recycled fibers

INOUE Mari, professor, Graduate School of Human Development and Environment

Recycled fiber refers to the product made by reusing waste yarn and waste fabric by turning them into fibers using machines. Here, we introduce the research being carried out by a team of private companies, public research institutes, testing organizations, and universities specializing in materials science and life sciences, with the aim of developing and promoting the use of recycled fibers made by mixing reclaimed yarn (regenerated from waste clothing, which is difficult to sort by material) with virgin cotton.



Research

FULL P.20

Research related to environment issues in the Kobe Project

Kobe University Secondary School

12th grade student: NOGUCHI Himari

13th grade student: FUKUDA Kousei

Teacher: TAKAGI Suguru

Students at Kobe University Secondary School take part in the Kobe Port Intelligence Project (Kobe Project) as part of Period for Inquiry-Based Cross-Disiplinary Study. In particular, students in grades 3 to 6 set their own individual themes and use a variety of inquiry methods to prepare a research paper over the course of a year. In the “Cooperative seminar” course, which is made up of more than ten students in grades 3 to 6, they deepen their research through discussions with their fellow students.



Fukuda's presentation at the special meeting of the Hyogo Geographical Society in December

Research

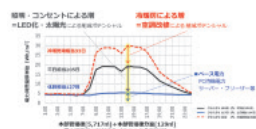
FULL P.16

Study on the prediction of emission reduction effects for developing strategies to reduce CO₂ emissions from university buildings

TAKEBAYASHI Hideki, associate professor, Graduate School of Engineering

YOSHIDA Naoto, project research associate, Carbon Neutral Promotion Headquarters

With the aim of formulating a concrete strategy for reducing CO₂ emissions for all buildings on the Rokkodai Campus of Kobe University, we conducted a survey of the actual operation of existing equipment and facilities, analyzed energy consumption and made predictions about the effect of reducing CO₂ emissions.



Understanding the reduction potential based on cluster classification results

Research and conservation activities

FULL P.21

Biological monitoring at the nature-friendly site of Kobe Satoyama forests, terraced rice fields, and reservoirs

MINAMOTO Toshifumi, professor, Graduate School of Human Development and Environment

“Nature positive” has been set as a goal to achieve by 2030, which means reversing the current trend of loss of biodiversity on Earth and moving towards improvement. In Japan, areas where biodiversity conservation is being promoted through initiatives by the private sector, etc., are registered as “nature-friendly sites.” The Kobe Satoyama forests, terraced rice fields and reservoirs in Kobe City’s Kita Ward was selected as one such site. Kobe University is conducting biological monitoring at nature-friendly sites using technologies developed in the university, such as environmental DNA analysis.



Biological monitoring in progress

Research

FULL P.17

Carbon neutral and freshwater carbon

NAKAYAMA Keisuke, professor, Graduate School of Engineering

Due to the limited amount of land available for increasing carbon sequestration in farmland soil and shallow coastal waters, new ways must be found to capture and store carbon dioxide. One such method is freshwater carbon, which captures and stores carbon dioxide through the photosynthesis of freshwater plants.



Carbon dioxide capture and storage by aquatic plants

Conservation activities

FULL P.22

Food drive initiative and collection of unused emergency food supplies from the University by the Food Loss Reduction Project Team

KITA Takashi, director, Institute of Promoting Academic Research Programs, Office for Promoting SDGs

The Food Loss Reduction Project Team, organized by Kobe University students, carried out a food drive initiative in collaboration with the Kobe University Co-op and faculty and staff members. The collected food items are delivered to single-parent households and others in need through the Certified NPO Food Bank Kansai.

Additionally, the Food Loss Reduction Project Team worked with faculty and staff members to collect unused items that were generated when the university’s emergency food supplies were updated. The unused items were then donated to the food bank.



Food items collected through various activities

Research

FULL P.18

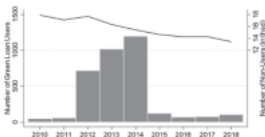
Research on the roles of green loans by government-affiliated financial institution for environmental policies

UCHIDA Hirofumi, professor, Graduate School of Business Administration

(Joint research with Dr. Anna L. SOBIECH of the University of Cologne)

Our research uses data from a government-affiliated financial institution to analyze the characteristics and subsequent performance of small and medium-sized enterprises that utilize green loans (government-backed environmental loans) to finance renewable energy (mainly solar power) projects.

The period analyzed was from 2012 to 2018, and the impact of changes to the FIT (feed-in tariffs) scheme was also taken into account.



The number of companies analyzed (line graph) and the number of companies using green loans (bar graph)

On creating the environmental report

This environmental report summarizes the results of environment-related activities at this university between April 2023 and March 2024 and is published as the “Kobe University environmental report 2024.”

The environmental report is predominately aimed at our students and faculties, with the objective of promoting communication about the environment both within and outside Kobe University. We introduce education, research and projects carried out at the university, in addition to highlighting efforts to promote environmental management, etc. as a way of measuring our environmental performance.

Guidelines used as references

“Environmental report guidelines, 2018 edition”

(Published in June 2018 by the Ministry of the Environment)

“Manual for writing environmental reports: For the environmental report guidelines, 2018 edition”

(Published in March 2019 by the Ministry of the Environment)

Kobe University environmental performance

Environmental management

Environmental management policy

Conservation of the global environment and the creation of sustainable societies are the most important issues of our time. In working toward the “Kobe University vision,” we will do our utmost, as an institute for education and research which meets the highest international standards, to tackle these issues through all our activities at the university. In March 2022, we established the “Basic policy to encourage environmental management during the fourth mid-term goal period (FY2022 to FY2027),” which was based on the “Kobe University environmental charter” and the “Kobe University basic policy on environmental and facility management.” Our environmental conservation activities are based on this policy.

Initiatives for paper waste reduction

The results of an investigation into waste bin garbage and garbage collection sites by a group of environment surveyors found that the amount of recyclable paper mixed in with trash had decreased, and garbage was being sorted appropriately for the most part. We are continuing our activities to encourage environmental management. Posters on garbage separation and recycling are put up in each department in order to spread awareness on proper separation and disposal of recyclables (cans, glass, PET bottles), combustible and non-combustible waste, recyclable paper, and confidential documents, etc. In addition, we designed standardized stickers for garbage bins. These stickers are attached to separated bins in areas such as hallways to promote the three Rs with regards to paper usage and waste.



Containers for recyclable paper (indoors)



Separate garbage bins (corridor)



Garbage investigation (indoors)



Garbage investigation (outdoors)

Basic policy to encourage environmental management during the fourth mid-term goal period

I. Promoting the three Rs

By promoting the three Rs (reduce, reuse, and recycle) among all university members, we will take assertive action to reduce waste while simultaneously reducing consumption of resources.

II. Initiatives for rationalization of energy usage

We aim to reduce greenhouse gas emissions by 46% from 2013 levels by 2030, as set by the government, by promoting more efficient use of energy, and we are committed to reducing university-wide greenhouse gas emissions to become carbon neutral by 2050.

III. Implementation and continuation of environmental management cycles

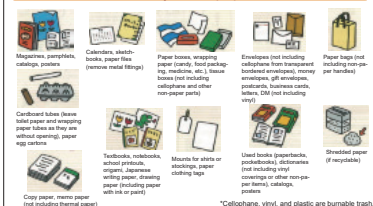
To encourage environmental management, we will continue to develop an ongoing action plan and implement our PDCA cycle.

IV. Strengthen environmental activities during “Environment month” (June)

We will conduct environment-related educational activities that focus on energy conservation as we enter the summer season when air conditioning is used more frequently.

Please cooperate in recycling leftover paper

Recyclable paper



Collection methods



The items on the right cannot be dissolved in water so they cannot be recycled!

Center for Environmental Management Created November 2016

Material balance

Material balance is the amount of energy and resources used for conducting business activities (“input”) and the environmental load generated by those activities (“output”).

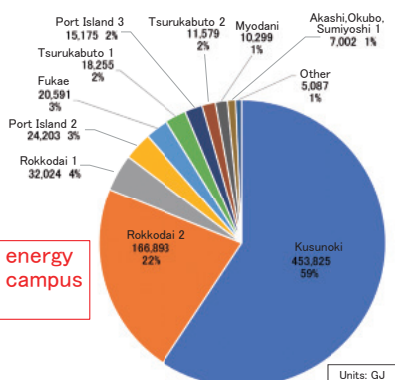
As our basic policy for environmental management, Kobe University promotes activities related to the three Rs (reduce, reuse, recycle) activities, the streamlining of energy usage, and the continued implementation of the environmental management cycle. We are actively working to conserve the environment based on this policy.

Input		FY 2023
Total energy	GJ	764,935
Electricity consumption	MWh	69,841
Gas consumption	1,000m ³	3,573
Heavy oil consumption	kL	1,294
City and other water usage	1,000m ³	317.0
Miscellaneous water usage	1,000m ³	52.3
Paper usage	t	143.49

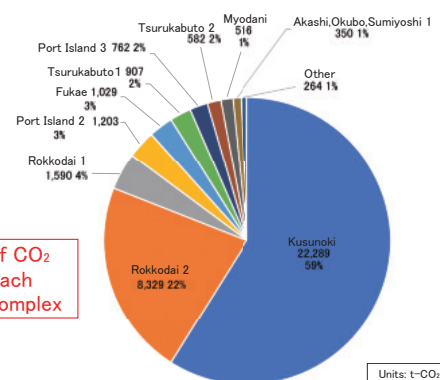
University overview		FY 2023
Student body (undergraduate)	People	11,411
Student body (graduate)	People	4,460
Study body (affiliated institutions)	People	1,280
Foreign student body	People	1,291
Students on academic scholarships	People	4,185
Teaching faculty	People	5,861
Foreign exchange programs with overseas universities	Institutions	373

Output		FY 2023
CO ₂ output volume	t-CO ₂	37,821
Wastewater	1,000m ³	369.4
Waste material (printer paper, newspaper, cardboard, confidential documents, etc.)	t	281.4
Waste material (raw garbage)	t	4.2
Waste material (combustible waste)	t	598.3
Waste material (large items)	t	0.0
Waste material (non-combustible waste)	t	0.0

Proportion of energy used by each campus or complex



Proportion of CO₂ emitted by each campus or complex



Units: GJ

Units: t-CO₂

Energy conservation and climate change prevention

Energy consumption

In FY 2023, energy consumption from electricity, gas, and heavy oil totaled approximately 765,000 gigajoules (*1). Energy consumption decreased by 10.1% compared to FY 2022, and the energy consumption per unit area (calculated by dividing the energy consumption by the total floor area of all buildings) also decreased by 9.5% compared to FY 2022 and by 14.1% per unit area compared to the pre-pandemic level in FY 2019.

We believe one of the factors was changing the air conditioning system from gas to electric. We will continue to promote energy conservation.

*1: Converted calorific values for electricity, heavy oil, gas, etc. based on article 4 of the "Regulations on rationalization of energy use, etc." (Revised on April 1, 2024)

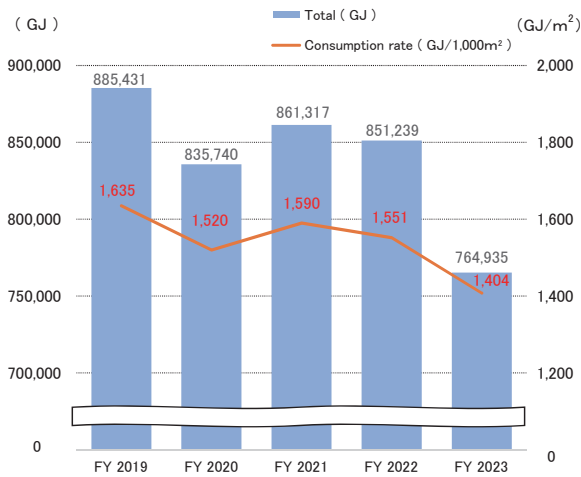


Figure 1: Energy consumption



CO₂ Emissions

CO₂ emissions per total floor area in FY 2023 (37,821 t-CO₂) increased by 25.3% from the previous year. This was due, in part, to an approximately 1.4 times in the CO₂ emission coefficient (a value indicating CO₂ emissions per kWh of electricity supply) of the main electricity supplier (from 0.000311 to 0.000434 t-CO₂/kWh) for electricity consumption, which accounts for approximately 78.9% of the university's energy consumption.

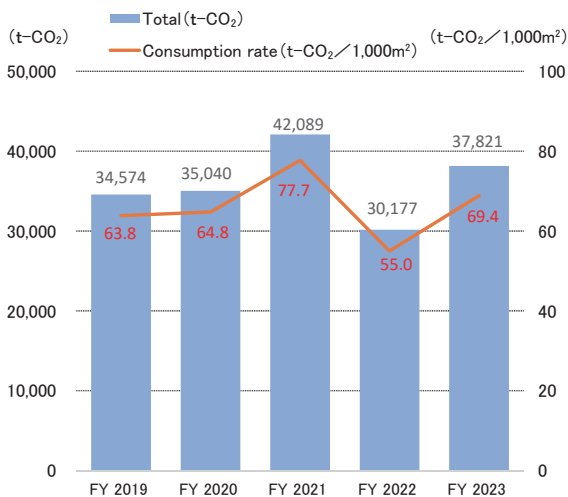


Figure 2: CO₂ emissions



Electricity consumption

The basic unit of electricity consumption in FY 2023 remained unchanged compared to the previous fiscal year but decreased by 3.0% compared to FY 2019, prior to the COVID-19 pandemic.

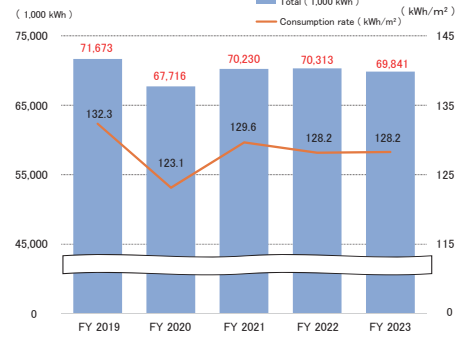


Figure 3: Electricity consumption



City gas consumption

The basic unit of city gas consumption in FY2023 decreased by 2.3% compared to the previous fiscal year and decreased by 14.3% compared to FY 2019, prior to the COVID-19 pandemic.

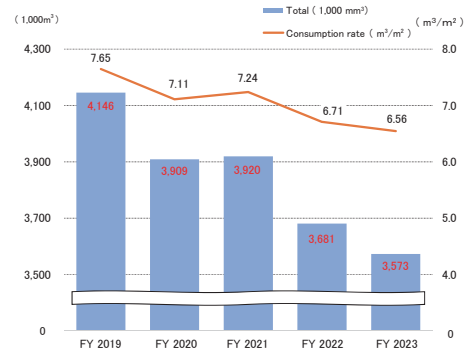


Figure 4: Gas consumption



Heavy oil consumption

The basic unit of fuel oil consumption in FY 2023 increased by 118.2% per unit compared to the previous year and increased by 58.6% compared to FY 2019, prior to the COVID-19 pandemic.

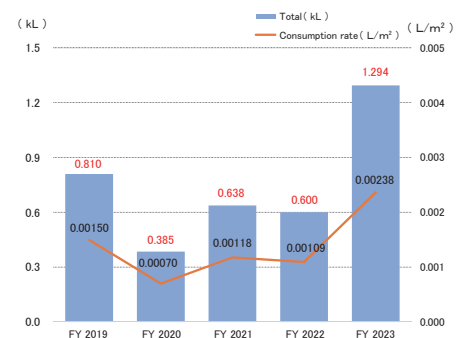


Figure 5: Heavy oil consumption



Kobe University environmental performance

Resource conservation and recycling

Water Usage

Water usage for FY 2022 decreased by 6,600 m³ (1.8%) compared to the previous fiscal year. At Rokkodai, we plan to conserve resources by using river water from Mt. Rokko for toilets and experiments. We will continue working on ways to use water resources efficiently.

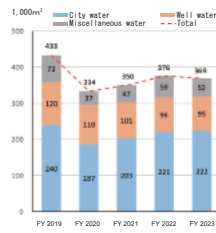


Figure 6: Water usage

Waste

In FY 2023, total waste amounted to 1,096.3 tons, a 17.0% increase from FY 2022 and a 7.8% decrease compared to FY 2019, prior to the COVID-19 pandemic. Additionally, the resource recycling rate for FY 2023 was 24.7%, a 3.3% decrease from FY 2022 and a 1.1% decrease from FY 2019, prior to the COVID-19 pandemic. The FY 2023 recycling rate by waste type is shown in figure 8. According to this figure, it is clear that the recycling rate for printing paper, newspapers, magazines, and cardboard has not improved. If the recycling rate for paper reaches 90%, the total recycling rate for all waste will increase from approximately 24.7% to 35.0% (calculated according to FY 2023 waste volume). Kobe University will follow its basic policy to encourage environmental management, and work to further improve the recycling rate.

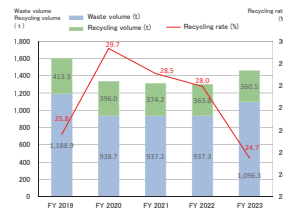


Figure 7: Amount of waste generated

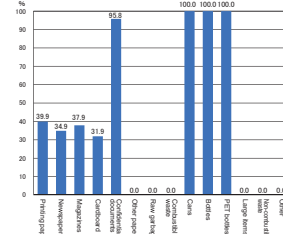


Figure 8: FY 2023 recycling rate by waste type

University-wide office paper consumption

Changes in consumption of office paper from FY 2019 to FY 2023 are shown in figure 9. Consumption increased 12.7% (16.2 t) from the previous fiscal year. The transition to post-COVID-19 conditions, such as a decrease in the frequency of online and hybrid classes and meetings, is believed to have influenced these outcomes. Compared to FY 2019, consumption has decreased by 23.8%.

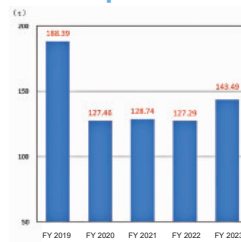


Figure 9: University-wide paper usage

Improving the management of specified facility notifications

Under the "Water pollution control act," specified facilities are defined as those used primarily for laboratory research, such as washing sinks and fume hoods, and those used in hospitals, such as kitchens, washing facilities, and bathing facilities. There are over 2,000 specified facilities on campus, and the university is legally required to notify the government before and after constructing, changing or decommissioning such facilities. Such notifications involve multiple levels of confirmation, involving faculties and graduate schools, the central administration and government agencies.

Moreover, the laws governing specific facilities are complex and difficult to understand, as they include many related laws such as the "Water pollution control act," "Sewerage act," and "Soil contamination countermeasures act." In addition, there is a lot of information to be included in the notification documents submitted to the government, so it is necessary to have chemical management and legal knowledge. As a result, when changes are made to the notification documents, it becomes difficult to determine which documents need to be processed and to what extent, and what kind of explanation is required for the changes.

We therefore decided to create and manage a list of the reception book and notification status of specified facilities in order to ensure that the procedures for specified facilities are carried out without fail. In terms of management, we decided to assign a registration number when a request is received and to enter it in the reception book, as well as to use the same number in email correspondence with departments as well as in the names of management folders.

Specific facility reception log

Specific facility registration status list

This system has allowed for efficient and error-free management of specific facility registration.

Green purchasing and procurement and environmentally friendly contracts

Green purchasing and procurement

The "Act on promotion of procurement of eco-friendly goods and services by the state and other entities (green purchasing law)" was implemented in April 2004. This law stipulates the necessary procedures for the promotion of environmentally friendly goods procurement, etc. by the national government, providing information on increasing the demand for such goods, and aims to realize a society capable of sustainable development with less impact on the environment. It was established with the aim of contributing to people's health and cultural life both now and in the future, with the government and other organizations taking the initiative in stimulating the purchase of environmentally friendly goods.

Based on this act, Kobe University creates a policy for procuring eco-friendly materials every year. It procures materials based on this policy, publicizes the results, and provides reports to the Ministry of Environment and Ministry of Education, Culture, Sports, Science and Technology.

The university conducted a study on procurement results for 287 items across 22 fields. A selection of these results for 8 major fields are shown in table 12. In FY 2023, we achieved a 100% procurement rate for the designated items.

We will continue to create procurement policies based on the "Green purchasing law," and proactively work to procure eco-friendly materials.

Table 12: Achievements in green purchasing and procurement in FY 2023

Category	Item	Total procurement volume	Procurement rate for specific items
Paper	Printing paper	142,871kg	100%
	Toilet paper	42,390kg	100%
	Other	1,746kg	100%
Stationery	Ballpoint pens	5,659	100%
	Envelopes (paper)	190,253	100%
	Other	50,078	100%
Office furniture, etc.	Chairs, desks, etc.	3,164	100%
Printing equipment	Copy machines, printers, etc.	4,912	100%
Interior	Curtains	44	100%
Work gloves		4,697	100%
Other textile products	Blue tarpaulins	39	100%
Services	Printing	699	100%
Average			100%

Current status of environmentally friendly contracts

Under the "Act on promotion of contracts of the state and other entities, which show consideration for reduction of emissions of greenhouse gases, etc." (hereinafter referred to as the "Act on contracts with consideration for the environment"), efforts must be made to develop contracts that give consideration to the reduction of greenhouse gases, etc. for the following eight categories: "procurement of electricity," "purchase and lease of automobiles," "procurement of ships," "building design," "building maintenance," "energy conservation improvement projects (ESCO projects)," "energy conservation improvement projects other than ESCO projects," and "disposal of industrial waste."

When procuring design work for the construction and renovation of buildings in FY 2023, Kobe University requested that the contractor submit proposals that effectively reduce environmental impact by taking into account the characteristics of the design work, thereby reducing the emission of greenhouse gases and other emissions.

The eight environmentally friendly contracts for high-voltage and special high-voltage electricity supply in the Rokkodai, Kusunoki, and Fukae areas, etc. are two-year contracts that cover FY 2022 and FY 2023, and they were implemented as shown in Table 13.

Table 13: Electricity supply in each area

Area	Amount of power contracted	Planned amount of power to be used	Successful bidder
Rokkodai area	6,520kW	23,376,000kWh/year	The Kansai Electric Power Co., Inc.
Tsunukabuto 2 nd Campus (Graduate School of Human Development and Environment)	690kW	1,617,000kWh/year	The Kansai Electric Power Co., Inc.
Fukae area (Graduate School of Maritime Sciences)	873kW	2,196,000kWh/year	The Kansai Electric Power Co., Inc.
Myodani area (Graduate School of Health Sciences)	390kW	1,257,000kWh/year	The Kansai Electric Power Co., Inc.
Port Island area	Integrated Research Center 180kW Integrated Research Center Annex 380kW Incubation Center 150kW	3,400,000kWh/year	The Kansai Electric Power Co., Inc.
Other four areas	Secondary School attached to Kobe University 378kW Elementary School attached to Kobe University 154kW School for Special Needs Education attached to Kobe University 92kW Food Resources and Education Research Center 90kW	860,000kWh/year	The Kansai Electric Power Co., Inc.
Kusunoki area	6,960kW	36,210,000kWh/year	The Kansai Electric Power Co., Inc.
International Clinical Cancer Research Center	540kW	1,814,600kWh/year	The Kansai Electric Power Co., Inc.

Outside opinion

Since FY 2020, I have been serving as chair of the Editorial Committee for the "Eco-Act' Kumamoto University environmental report." We sometimes refer to environmental reports from other universities to help us plan the content and structure of our own, and I am delighted to have had the opportunity to connect with the "Kobe University environmental report 2024." Here, I wish to offer some candid impressions.

First, the message from President FUJISAWA Masato (Page 2) describes Kobe University's strong commitment to and effective implementation of various initiatives toward achieving carbon neutrality (CN). Kobe University has joined the Coalition for Achieving Carbon Neutrality and has taken on a leadership role in the working group. The university's Office for Promoting SDGs has established a Carbon Neutral Promotion Headquarters and implemented two symposia and a site visit in 2024 alone, as noted on the university's website. An interview article titled "Kobe University's approach to regional decarbonization utilizing its research resources" highlights the acquisition of useful information for the realization of a CN society in collaboration with local companies and students, as well as the implementation of a site visit that involved students. Under Fujisawa's leadership, faculty, staff, and students alike demonstrate a sense of responsibility and determination to tackle CN challenges and acknowledge their roles in shaping the future. This focus made me feel as though Kumamoto University must rise to the challenge in its own way. For humanity to sustainably utilize Earth's resources and environment, it is necessary to reduce various human-induced environmental burdens. Furthermore, the execution of action policies requires multifaceted perspectives. In most cases, there are two sides to every action and reaction; therefore, addressing SDGs and CN challenges necessitates balancing these factors. The director of the Center for Environmental Management, UCHINO Takashi, illustrates this balance by referencing the rapidly growing field of generative AI, noting the enormous energy consumption from semiconductor manufacturing in the system development process, potentially impacting government decarbonization policies (Page 3). Recent efforts in Kumamoto to attract domestic and foreign semiconductor firms are expected to yield economic benefits, but will also raise important issues regarding energy consumption, decarbonization, and water resource preservation.

In "Clothing and environmental issues" (Page 13), Professor INOUE Mari from the Graduate School of Human Development and Environment explores whether plastic or natural fibers are more environmentally friendly. Amid growing social concern about marine pollution caused by plastic waste and microplastics, the socially dominant view might favor natural fibers for their biodegradability. However, Inoue points out the severe environmental impact of agricultural chemicals used in cotton cultivation due to soil pollution, which pollutes the soil and causes health problems for workers and local residents, as well as the vast amount of water required, providing a balanced assessment. Furthermore, Professor NAKAYAMA Keisuke from the Graduate School of Engineering succinctly explains the background and necessity of CN and introduces his "Freshwater carbon" initiative using aquatic plants (Page 17). The diverse and top-level initiatives at Kobe University illustrate robust, collaborative, and comprehensive efforts aimed at maximizing outcomes.

So, how can we pass on the SDGs and CN issues to students and other generations, so that they will not be a one-off effort? Actually, although the "Kumamoto University environmental report 2XXX" can be freely downloaded from the university's website, to be honest, it is not widely known among students. For younger generations accustomed to short videos, reading material that extends over several dozen pages may no longer be a medium that gets

through. For this reason, we plan to create a digest version of our report next year. We are also considering introducing the report in general education classes, presenting and submitting tasks, sharing information via videos and social media, and creating an environment where the reports are actively read and utilized.

While space prevents me from mentioning all its contents, the "Kobe University environmental report 2024" contains many insights beyond CN. I express my respect and gratitude to all the faculty, staff and related parties who contributed to its creation.

1) 20230908_University, etc. Coalition_Interview_Kobe University_v7-1.pdf (uccn2050.jp)

2) https://www.kumamoto-u.ac.jp/daigakujouhou/jouhoukoukai/eco_ac



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1998 - Assistant, Department of Environmental Science, Faculty of Science, Kumamoto University

2002 - Ministry of Education research fellow abroad, Michigan State University

2003 - Research affiliate, State University of New York

2007 - Associate professor, Graduate School of Science and Technology (Science), Kumamoto University

■ Awards received

2015 - Environmental Chemistry Award, Japan Society for Environmental Chemistry

■ Research field : Environmental chemistry, environmental risk science, cultural heritage science

Understanding the dynamics and bioaccumulation patterns of trace harmful chemicals in the environment and evaluating related risks

Historical research and preservation methods through chemical analysis of cultural heritage samples

■ Affiliations

: Japan Society for Environmental Chemistry, Japan Society on Water Environment, Japan Society for Scientific Studies on Cultural Properties
SETAC (Society of Environmental Toxicology and Chemistry, USA)

About the cover

In order to further publicize this environmental report to our students (who comprise the majority of the university population), we created the cover by requesting photos and illustrations from undergraduate and graduate students at the university, as well as from students at our affiliated schools. The cover photo was selected by the Environmental Planning and Assessment Committee, with the photo below receiving the grand prize.

From the many works submitted, we also selected two photos for Excellence Awards as shown below. We would like to take this opportunity to express our thanks to all those who submitted photos and illustrations.

Grand Prize (Cover photo or illustration)

Work by OSHINO Chisa, 3rd year, Faculty of Agriculture, Kobe University
Shooting location: Rokkodai Main Building

Photographer's comment:

Even the familiar Main Building of the Rokkodai Campus offers a completely different landscape when viewed from the perspective of an insect.



Excellence Awards (Cover photo or illustration)

Work by YANIGAKI Yu, 2nd year master's student, Graduate School of Human Development and Environment, Kobe University
Shooting location: Near the Kobe University Centennial Hall



Work by SHIRAKI Hodaka, 2nd year master's student, Graduate School of Science, Kobe University
Shooting location: Between the Research Center for Advanced Membrane and Film Technology and Science and Technology Research Building 3



- Date of issue: September 2024
- Created by the Center for Environmental Management
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