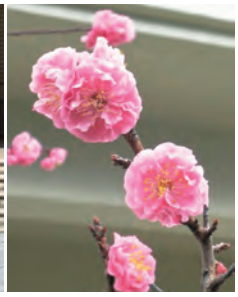
Environmental Report 2022 Abridged Edition

KOBE UNIVERSITY

Message from the President





Masato Fujisawa, University President

April 2005: Professor, Kobe University Graduate School of Medicine
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, championing the philosophy of “harmony between theory and reality” in the cosmopolitan port city of Kobe, strives to pursue knowledge and cultivate individuals capable of contributing to society, producing numerous graduates with active careers across varied fields.

Looking at the world today, there are many problems occurring on a global scale, such as the COVID-19 pandemic that began the year before last. Natural disasters such as earthquakes and localized torrential rains; climate problems related to global warming; environmental and energy crises facing societies that aim to become carbon-free; poverty, famine, and food problems in developing countries; human rights issues related to race and gender; peace issues involving nuclear weapons; the chaos of international politics; health and welfare issues in super-aging societies. There is no end to the list of challenges we must face, and all of these are global issues that the whole world should coordinate their responses towards and work on resolving together. At Kobe University as well, we aim to actively engage in cutting-edge international joint research and education directed towards resolving these worldwide problems.

In Japan, Prime Minister Fumio Kishida made the following announcement in his general policy speech to the 207th Diet Session on December 6, 2021: “To realize the goal of a carbon-neutral society by 2050 and the target of a 46% reduction in emissions by FY 2030, we will revise regulations to maximize the introduction of renewable energy and invest boldly in clean energy-related fields.” With the administration’s “new capitalism” at the core, a clean energy strategy is being formulated that will create economic growth out of measures to combat global warming.

To realize a carbon-neutral society by 2050, not only technological innovation, but also economic and social innovation is essential, and for that, broad knowledge ranging from the humanities and social sciences to the natural sciences is necessary.Through their education, research, and social contribution activities, universities are expected to play a significant role in creating scientific knowledge that forms the basis of governmental/ regional policies and innovation, and have a mandate to make this knowledge widespread. Universities also play an important role in encouraging their communities to reduce their carbon footprint by serving as hubs of knowledge in each community, then expanding that community model to the rest of the world.

In light of this, Kobe University will participate in the University Coalition for Achieving Carbon Neutrality as a platform to improve the university’s functionality and dissemination power in this area by strengthening cooperation with national and local governments, businesses, and other universities and colleges both in Japan and abroad.

Mirroring the slogan of ‘multidisciplinary co-creation and collaboration’, all of our staff and students will work together in order to bring about creative improvements and invigorate Kobe University’s core image as a global knowledge hub that pulses with the shining light of our future society. As society continues to change as we reach the end of the COVID-19 pandemic, Kobe University will become the center of the community, aiding the local revitalization of the economy, culture, life, the environment, and human activity, while striving to broadcast information throughout Japan and the world; doing our utmost to contribute towards global society.

Thank you all for your continued support and cooperation.

Message from the Director of the Center for Environmental Management

University-originated Carbon Neutrality

Atsunori Mori, Director of the Center for Environmental Management

The COVID-19 pandemic has made its way into a third season. For now, there doesn’t seem to be a clear way out. As a result, we have been forced to change our lifestyles dramatically and our daily freedoms continue to be severely restricted. In addition, resource and energy crises have also begun to cast a long shadow over economic activities, primarily in Europe. This began in 2022 when Russia invaded Ukraine, since both countries are leading producers of resources and materials for export. In Japan as well, the waves of these crises are felt in the depreciation of the yen and rising prices, and the future is becoming increasingly uncertain. Assuming that nuclear power cannot be relied upon to provide a stable source of energy and oil prices remain high, we will be forced to use coal-fired power generation, but this clearly goes against the trend towards carbon neutrality. The dialing down of previously strong pressure from European countries could give Japan a temporary respite from meeting numerical targets that aim towards realizing a carbon free society.

However, we must not simply relax. Humankind may suffer from unknown diseases and wars that lead to social unrest, however so long as we foolishly continue our economic activities by burning materials that keep releasing carbon dioxide into the atmosphere,the air temperature will rise, the polar ice caps will melt and harmful UV rays will break through the ozone layer. This will push the hands of the doomsday clock forwards.

In the short-term, we must pay careful attention to how targets for reducing CO_2 emissions set forth by governments and local governing bodies are affected and revised due to recent circumstances. To realize a sustainable society, we must surely continue the efforts we have made up to now without faltering. As individual enterprises in society, it is also essential for universities to seriously work to meet numerical targets for reducing CO_2 emissions, which aim towards realizing carbon neutrality. Furthermore, as research institutions, universities have a duty to society to disseminate intellectual information such as revolutionary basic research and technological achievements that can provide guidance to the nation and to the rest of the world on how to achieve carbon neutrality. At Kobe University, we hope that we can be of service to society by creating our own environmental innovations towards making sustainable society a reality, while working to unite the diverse wisdom of our faculty to save energy and resources.

Environmental Charter

Kobe University established an Environmental Charter on September 26, 2006 and carries out various environmental conservation activities based on these 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 modern-day issues: 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 mountains and oceans to cultivate capable, environmentally-aware individuals. 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. Cultivate and Support Environmentally Aware Individuals
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 on it. 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. Promote Research to Maintain and Support the Global Environment
It is necessary to consolidate the results of numerous research studies in order to overcome the various challenges facing to 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. Take a Leading Role in Environmental Conservation
Each individual's behavior is important when it comes to 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.

Environmental Education, Research and Topics

Topics

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Research of University-Originated Urban Innovation Kobe and ESD Exercises

Risa Kojima, Associate Professor, Graduate School of Economics

(1)Research of University-Originated Urban Innovation Kobe (Aging Society and Resource Recycling)
When creating a circular economy, resource separation is a very important activity that improves the efficiency of recycling. In this study, we analyze the current state of sorted disposal in each generation, especially focuses particularly on the situation of elderly households aged 65 and older.
(2)ESD (Education for Sustainable Development) Exercises (Recycling of Waste Plastic and Community Development)
We carried out courses on analyzing and evaluating policies in the pilot program Community Drop-Off System started by Kobe City in FY 2021 from the perspective of sustainability in ESD Exercises I and II through industry-government-academia-public collaboration.


A site of Community Drop-Off (Futaba school building)


Visiting a Daiei Kankyo Co., Ltd. waste plastic recycling plant


Conducting a depth interview

Topics

PDF P.10

The Kobe University Environment Club Ecofuru 's on-demand classes

Yoshikazu Tsuru, Environmental Planning Coordinator, Office of Safety and Health/Environmental Management

To help 3rd grade students at Kobe University Elementary School learn about the importance of food, we held a 45-minute class combining a card game about the environment and a lecture on the theme of food loss.
The environment-themed card game was thought up by members of Ecofuru, who made letter and picture cards related to food.
One of the responses from participating elementary school children was that we should try not to leave any food on the plate when we eat. Food loss is a familiar theme for elementary school children, and we were able to make them feel concerned about the environment.


Environment-themed card game


Playing the environment-themed card game


A lecture on food loss

Topics

PDF P.9

○Environmental Education Using Environmental Reports
To make the Environmental Reports made at this university better known within the university, and to gather opinions and feedback from students to guide the creation of future Environmental Reports and environmental conservation activities, we have been holding these events since FY 2011. Since FY 2014, some coursework such as report assignments and short tests has been based on Environmental Reports during Introductory Environmental Studies.
An *Environmental Management Guidebook* with details about the Environmental Charter of Kobe University and efforts and rules for environmental management, is also distributed every year to new students and new faculty members.

○Introductory Environmental Studies
Global environmental issues represent one of the largest global challenges of this century. At the Center for Environmental Management, we hold lectures in Introductory Environmental Studies A/B as university-wide common subjects.
This year, Risa Kojima of the Graduate School of Economics assumed the role of lecturer in charge, and we added content about efforts to reduce containers and packaging and resolve the plastic garbage content problem, with the title of SDGs12: Designing the Responsibility to Produce and to Consume.

Education

PDF P.11

Thinking About the Environment in Terms of Clothing in Daily Life

Mari Inoue, Professor, Graduate School of Human Development and Environment & Principal, Secondary School attached to Kobe University

At elementary, middle, and high school, students study subjects such as how chemical fibers are made and surfactants in Science class, and content with a cultural and social background such as gender and labor issues in Social Studies class or other classes. In Home Economics class, in the area of clothing in daily life, students learn practical knowledge about the types and functions of the different kinds of clothing materials: fibers, yarns, and fabrics, based on their background. In my courses, Clothing Science, Apparel Design, and Home Economics Education C/D, this knowledge is grasped from the perspective of environmental issues, and value is placed upon personally connecting it to sustainable lifestyle.


The main components of comfort


Water absorption lab


Thread reeling lab


Identification of fibers by the sense of touch

*For more information see the full Japanese language Environmental Report 2022 on the Kobe University website. (Page numbers at the top indicate the page number in the PDF version.)

Research

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Research Aiming to Reduce Plastic in the Kobe Project

Kobe University Secondary School 9th class students
Naho Kitagawa Kyoka Umeda Ririko Wada
Teacher: Suguru Takagi

At Kobe University Secondary School, we work on the Kobe Port Intelligence Project (the Kobe Project) during Period for Inquiry-Based Cross-Disciplinary Study. There, students between the 3rd and 6th grades choose one theme each and use various inquiry methods to write an essay over one year. During the cooperative seminar comprised of over ten students between the 3rd and 6th grades, students deepen their research mainly through discussion with other students.
In Takagi's seminar, three students carried out research on the theme of reducing plastics after listening to the 10th Center for Environmental Management University-Wide Report Session Special Lecture "The Present and Future of Ocean Plastic Pollution Research" and further becoming inspired by face-to-face advice from the Environmental Planning Coordinator in the Office of Safety and Health/Environmental Management at Kobe University and the Administrative Manager of the Center for Environmental Management.

Photo 1: Advice from the Center for Environmental Management (Taken on Tuesday, June 22, 2021)

Photo 2: Students in charge of research

Research

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Major New Research from the Maritime Carbon Neutrality Research Society

Enna Hirata, Associate Professor, Graduate School of Maritime Sciences

Shipping is the foundation of our nation's economy. As one of the world's leading maritime nations, 99.6% of Japan's trade is conducted by sea, and approximately 40% of domestic cargo transport (80% of basic industrial goods) is dependent on marine transport. Therefore, reducing shipping sector emissions and developing an emissions trading environment will have a significant impact on achieving the net-zero goal. In this context, we established the Maritime Carbon Neutrality Research Alliance (MCNRA) last year. The primary aim of this research alliance is to propose a series of concrete measures that the shipping industry and governments should take toward net-zero while sustaining shipping industry under the effect of climate change. The research group is composed of researchers from multiple disciplines, universities and research institutes in Japan. Members hold workshops and present in conferences regularly to promote the latest research findings. In addition, we are preparing a multi-disciplinary course on marine decarbonization in the Faculty of Oceanology, which is to be offered from the school year of 2024.

"Overview of Research and Collaborative Activities at the Maritime Carbon Neutrality Research Society"

Research

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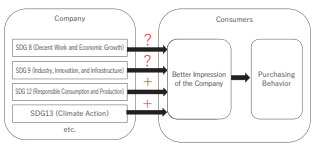
Empirical Analysis of the Impact of Companies' Efforts Towards SDGs on Consumers' Purchasing Behavior

Eri Nakamura, Associate Professor, Graduate School of Business Administration

In our research, it has become clear through data analysis of consumer surveys taken in Japan, the United States, and Germany that not all efforts towards SDGs encourage consumers to purchase, and also that efforts towards SDGs do not intrinsically have an especially strong effect on the decision-making of consumers when purchasing. The SDGs that have a particularly strong effect on the purchasing behavior of consumers are SDG12, relating to sustainable consumption and production, and SDG13, relating to climate change. On the other hand, two of the SDGs that many companies are working towards, SDG8, relating to economic growth, and SDG9, relating to industry and technological infrastructure, do not have a pronounced impact.
It is also known that there is a significant difference in these effects between long-term goods such as refrigerators that are used for over ten years, mid-term goods such as sneakers that are used for a few years, and short-term goods such as sandwiches that are consumed on a daily basis.



The Relationship Between Companies' Efforts Towards SDGs and Consumers' Purchasing Behavior

Other

PDF p.15

Signals of Marine Hazards Captured at the Fukae Campus

Mitsuru Hayashi, Associate Professor, Research Center for Inland Seas

We have introduced tsunami marine hazards in FY 2015 and marine and weather observation at Fukae Campus in FY 2018 in these Environmental Reports. During a long period of observation, signals from three major marine hazards were captured. Marine hazards are phenomena that threaten to cause natural disasters or otherwise affect oceanic activities or the natural environment, and we have captured signals relating to the tsunami following the 2011 off the Pacific coast of Tohoku Earthquake that occurred on March 11 (Figure 1), the storm surge caused by Typhoon Jebi (T1821) on September 4, 2018 (Figure 2), and the change in atmospheric pressure following the Hunga Tonga–Hunga Ha'apai eruption on January 15, 2022 (Figure 3). We are researching the impact of this kind of marine hazard on the marine environment.

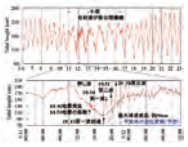


Figure 1: Signal from the tsunami following the 2011 Tohoku earthquake captured at Fukae Campus

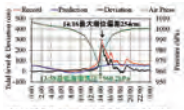


Figure 2: Storm surge from T1821 that occurred at Fukae Campus

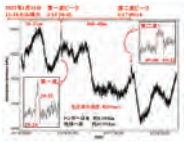


Figure 3: Atmospheric pressure change from the volcanic eruption in Tonga captured at Fukae Campus

Other

PDF p.16

Online Class About Vibrational Spectroscopy and Global Warming

Keisuke Tominaga, Professor, Molecular Photoscience Research Center

In January 2022, we received a request from Professor Sandhya Babel at the Sirindhorn International Institute of Technology in Thailand to assist with a class with the above title, and we held the class online on March 23. Thailand is a country that has undergone rapid economic development, even compared to other countries in Southeast Asia, but this kind of rapid development is always accompanied by environmental issues, and they are highly conscious of environmental issues. I am doing research in molecular science fields using spectroscopy, and since the mechanism by which CO_2 causes global warming at a molecular level is fairly related to my research, I gave the lecture with the above title. The class was intended for undergraduate students, and students were viewing it from a lecture hall. There were also about 50 online participants such as graduate students.

Lecture when visiting in 2019. Professor Sandhya Babel is shown center

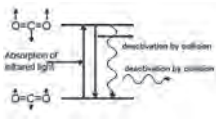


Figure 1: Absorption and emission of infrared light by carbon dioxide

Preparing this Report

This Environmental Report summarizes the results of environment-related activities at this university between April 2021 and March 2022, and is published as the Kobe University Environmental Report 2022.
The Environmental Report is predominately aimed at our students and faculty, with the objective of promoting communication about the environment both in and outside Kobe University. We introduce education, research, and projects carried out at the university, in addition to highlighting eff orts 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)

*For more information, see the full Japanese language Environmental Report 2022 on the Kobe University website. (Page numbers at the top indicate the page number in the PDF version.)

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 2016, we established the Basic Policy to Encourage Environmental Management During the Third Mid-Term Goal Period (FY2016 to FY2022), 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.

Basic Policy to Encourage Environmental Management During the Third Mid-Term Goal Period

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. Based on the Kobe University Environmental Charter and the Kobe University Basic Policy on Environmental and Facility Management, which summarize the basics of this university's environmental and facility management, we established the following environmental management policy during the Third Mid-Term Goal Period.

I. Promote the 3 Rs

By promoting the 3 Rs (reduce, reuse, and recycle) among all university members, we will take assertive action to reduce waste while simultaneously reducing resource consumption.

II. Efforts to Streamline Energy Use

By promoting effective energy usage practices, we will work to reduce the average yearly energy consumption rate* by more than 1%, and reduce CO_2 emissions throughout the university.

(*) Consumption rate measured according to the total floor area of buildings.

III. Execute and Maintain Environmental Management Cycles

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

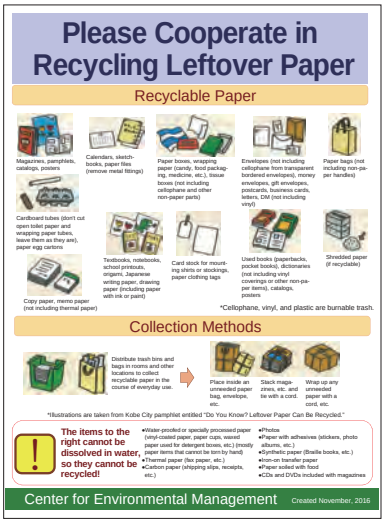
Paper Waste Reduction Initiative

The results of an investigation into trash can 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 trash 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 trash, non-combustible trash, recyclable paper, confidential documents, etc. In addition, we designed standardized stickers for trash cans. These stickers are attached to separated bins in areas such as hallways to promote the 3Rs with regards to paper usage and waste.

Garbage investigation (indoors)

Garbage investigation (outdoors)

Containers for recyclable paper



Separate trash cans

Stickers indicating waste separation

Material Balance

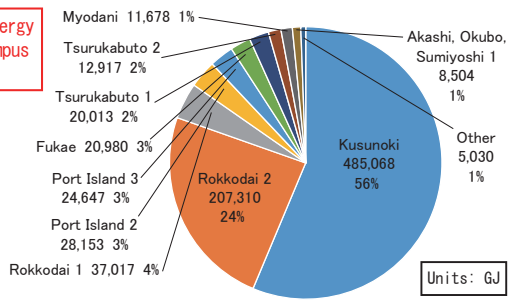
Material balance is the amount of energy and resources used for conducting business activities ("input"), and the environmental load generated by those activities ("output").
As our basic policy for environmental management, Kobe University promotes activities related to the 3Rs (reduce, reuse, recycle) activities, the streamlining 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 2021
Total energy	GJ	861,317
Electricity consumption	MWh	70,230
Gas consumption	1,000m^3	3,920
Heavy oil consumption	kL	0.638
City and other water usage	1,000m^3	301.9
Miscellaneous water usage	1,000m^3	48.3
Paper usage	t	128.74

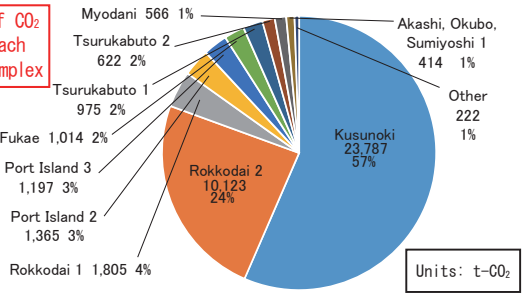
University Overview		FY 2021
Student body (undergraduate)	People	11,493
Student body (graduate)	People	4,493
Study body (affiliated institutions)	People	1,293
Foreign student body	People	1,179
Students on academic scholarships	People	11,614
Teaching faculty	People	6,822
Foreign exchange programs with overseas universities	Institutions	374

OUTPUT		FY 2021
CO_2 output volume	t-CO_2	42,089
Wastewater	1,000m^3	317.6
Waste material (OA paper, newspaper, cardboard, confidential documents, etc.)	t	280.7
Waste material (raw garbage)	t	4.2
Waste material (combustible waste)	t	520.6
Waste material (large items)	t	131.1
Waste material (non-combustible waste)	t	0.6

Proportion of energy used by each campus or complex



Proportion of CO_2 emitted by each campus or complex



Energy Conservation and Climate Change Prevention

Energy Consumption

In FY 2021, energy consumption from electricity, gas, and heavy oil totaled approximately 861,000 gigajoules (*1). Energy consumption increased by 3.1% compared to FY 2020, and the energy consumption per unit area (calculated by dividing the energy consumption by the total floor area of all buildings) also increased by 4.6% compared to FY 2020.
We believe that the reason for the increase was that in FY 2021, we mainly held face-to-face classes, taking into account the current status of the COVID-19 pandemic when balancing infection prevention measures and students' learning opportunities. We will continue to work to conserve energy.
*1: Converted calorific values for electricity, heavy oil, gas, etc. based on Article 4 of Regulations on Rationalization of Energy Use, etc.

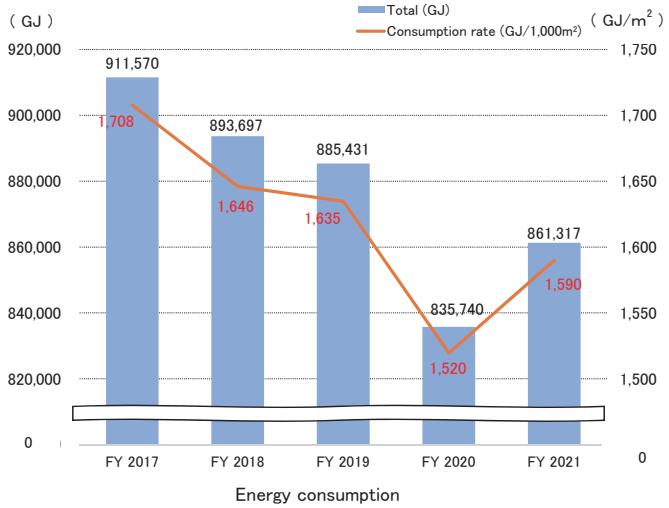


Figure 1: Energy consumption

FY 2020 1,520 GJ/1,000m² → 4.6% increase → FY 2021 1,590 GJ/1,000m²

CO_2 Emissions

CO_2 emissions (42,089 t-CO_2) per unit floor area (541,718 m^2) in FY 2021 increased by 19.9% compared to the previous fiscal year. Electricity accounts for approximately 80% of the university's energy consumption. Therefore, we suppose that there were two reasons for the increase in emissions- firstly the CO_2 emission factor (the value shows how much CO_2 is emitted for each kWh of electricity provided) of the university's main electricity provider increased by approximately 22% (0.000389→0.000474tCO_2/kWh). Secondly, we mainly held face-to-face classes, taking into account the current status of the COVID-19 pandemic when balancing infection prevention measures and students' learning opportunities.

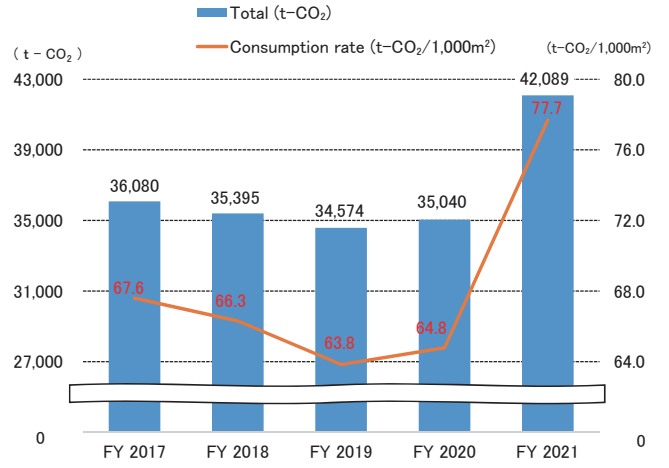


Figure 2: CO_2 emissions

Electricity Consumption

In FY 2021, electricity usage increased by 5.3% compared to the previous fiscal year.

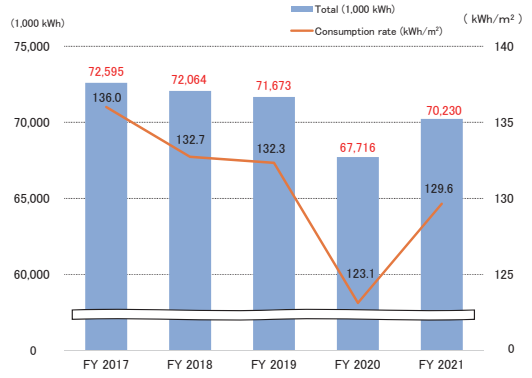


Figure 3: Electricity consumption

FY 2020 123.1 kWh/m² → 5.3% increase → FY 2021 129.6 kWh/m²

City Gas Consumption

In FY 2021, city gas usage increased by 1.8% compared to the previous fiscal year.

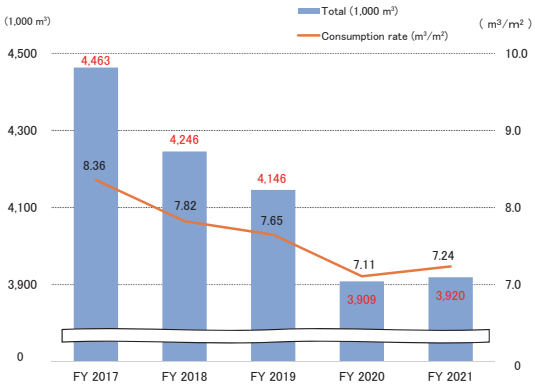


Figure 4: Gas consumption

FY 2020 7.11 m³/m² → 1.8% increase → FY 2021 7.24 m³/m²

Heavy Oil Consumption

In FY 2021, heavy oil usage increased by 68.6% compared to the previous fiscal year.

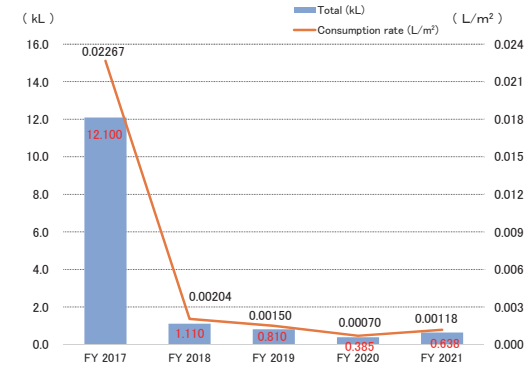


Figure 5: Heavy oil consumption

FY 2020 0.00070 L/m² → 68.6% increase → FY 2021 0.00118 L/m²

Resource Conservation and Recycling

Water Usage

Water usage for FY 2021 increased by 16,000 m^3 (4.8%) compared to the previous fiscal year.
At Rokkodai, we are conserving resources by using river water from Mt. Rokko for toilets and experiments.
We will continue working on ways to use water resources efficiently.

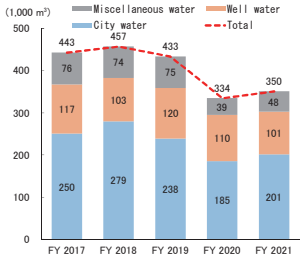


Figure 6: Water usage

Waste

Waste volume from FY 2017-2021 is shown in Figure 7. Waste volume for FY 2021 was 937.2 t, a 0.16% decrease from FY 2020.
The recycling rate in FY 2021 was 28.5%, 1.2% lower than in FY 2020.
The FY 2021 recycling rate by waste type is shown in Figure 8. According to this figure, it is clear that the recycling rate for OA 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 28.5% to 39.9% (calculated according to FY 2021 waste volume). Kobe University will follow its basic policy to encourage environmental management, and work to further improve the recycling rate.

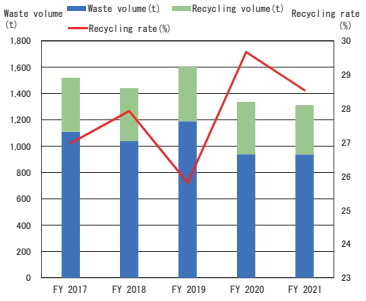


Figure 7: Amount of waste generated

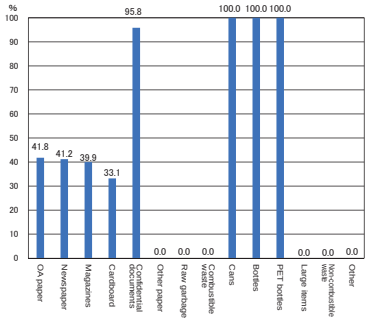


Figure 8: FY 2021 recycling rate by waste type

University-Wide Office Paper Consumption

Changes in consumption of office paper from FY 2017 to FY 2021 are shown in Figure 9.
Consumption increased 1.0% (1.28 t) from the previous fiscal year.
We will continue to work to reduce our paper usage by making conferences and lectures paperless, introducing double-sided printing, printing multiple pages per sheet, and reusing the reverse side of paper that has already been printed on once.

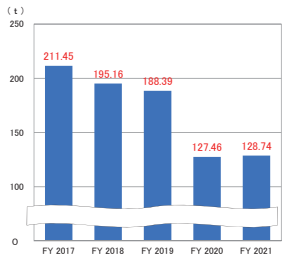
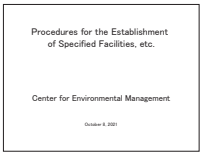


Figure 9: University-wide paper usage

Expanding E-Learning About Specified Facilities

The Specified Facilities to which the Water Pollution Control Law applies are wash basins and draft chambers used mainly for experiments and research. There are approximately 2000 Specified Facilities on campus (washing facilities, etc.), and it is a legal requirement that the government be notified prior to and after any new installation, change, or decommission.
However, there are numerous laws concerning Specified Facilities including the Water Pollution Control Law, the Sewerage Act, and the Soil Contamination Countermeasures Act, and these laws are complex and hard to understand. Both legal knowledge and knowledge of chemical substance management are necessary to fill in the large amount of required information for the notification materials to be submitted to the government. To address this, we have created e-learning materials about Specified Facilities-related laws and document preparation, etc., which we encourage staff members to utilize.
The e-learning course is around 30 minutes long. To improve users' understanding, we have enhanced this course by adding narration using a speech synthesis program so that users can hear the content in addition to reading the text on the screen.
We will continue to update the materials in response to law and ordinance revisions, and find more ways to further improve understanding.



E-Learning related to Specified Facilities

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 282 items across 22 fields. A selection of these results for 9 major fields are shown in Table 12. In FY 2021, 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 2021

Category	Item	Total procurement volume	Procurement rate for specific items
Paper	Copy paper	128,127 kg	100%
	Toilet paper	43,174 kg	100%
	Other	1,668 kg	100%
Stationery	Ballpoint pens	6,324	100%
	Envelopes (paper)	231,289	100%
	Other	64,051	100%
Office furniture, etc.	Chairs, desks, etc.	3,477	100%
OA equipment	Copy machines, printers, etc.	6,405	100%
Lighting	Fluorescent tubes	8,970	100%
Interior	Curtains	234	100%
Work gloves		4,352	100%
Other textile products	Blue tarpaulins	49	100%
Services	Printing	482	100%
Average			100%

Green Purchasing and Procurement and Environmentally Friendly Contracts

Current Status of Environmentally Friendly Contracts

In accordance with the Act on Promotion of Contracts of the State and Other Entities, Which Show Consideration for Reduction of Emissions of Greenhouse Gases, etc. (hereafter referred to as the "Environmentally Friendly Contract Law"), we must strive to promote contracts that take into account the reduction of greenhouse gases and other pollutants. This covers contracts relating to the following 7 areas: electricity supply, purchase or rental of vehicles, procurement of ships, energy-saving renovations (ESCO projects), building design,industrial waste processing, and building maintenance management.
From FY 2020 to FY 2021, ships produced at Kobe University to travel in coastal waters were outfitted with main engines, generators, and motors that comply with environmental regulations prescribed by laws and ordinances to reduce the emission of greenhouse gases, etc.
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 2020 and FY 2021, and they were implemented as shown in Table 13.

Table 13: Electricity supply in each area

	Amount of Power Contracted	Planned Amount of Power to be Used	Successful Bidder
Rokkodai Area	7,030kW	24,434,000kWh/year	Kyuden Mirai Energy Corp.
Tsurukabuto 2nd Campus (Graduate School of Human Development and Environment)	672kW	1,602,000kWh/year	Hope Inc.
Fukae Area (Graduate School of Maritime Sciences)	873kW	2,196,000kWh/year	Hope Inc.
Myodani Area (Graduate School of Health Sciences)	331kW	1,075,000kWh/year	Hope Inc.
Port Island Area	Integrated Research Center 267 kW Integrated Research Center Annex 409 kW Incubation Center 149 kW	3,568,000kWh/year	Hope Inc.
Other 4 Areas	Secondary School attached to Kobe University 208 kW Elementary School attached to Kobe University 173 kW School for Special Needs Education attached to Kobe University 102 kW Food Resources and Education Research Center 93 kW	847,000kWh/year	Hope Inc.
Kusunoki Area	7,040kW	36,720,000kWh/year	Kyuden Mirai Energy Corp.
International Clinical Cancer Research Center	477kW	1,942,700kWh/year	Hope Inc.

Outside Opinion

I have been involved in the creation of Kyoto University's Environmental Reports ever since national university corporations and similar institutions started being required to prepare and publish such reports by Environmental Consideration Law in 2006. Since I was one of the people responsible for environmental management at Kyoto University (belonging to the Center for Environmental Science at Kyoto University, the equivalent of the Center for Environmental Management at Kobe University), I truly put my whole soul into preparing every part of the reports from constructing the framework, composition and design to the writing process, especially during the first few years. In a sense, this effort was one of the starting points for me. These various efforts were favorably evaluated and I received a variety of commendations. However, in the past few years, I began to feel like my commitment to the Environmental Reports had become a mere formality. Just as I was thinking like that, I received this request for an outside opinion.

Before I received your university's Environmental Report, I was agonizing a bit over what kind of mood to read it in, but I found that my worries had been unnecessary as soon as I turned the first page. President Fujisawa's firm greeting was followed by Director Mori's frank message, very informative cutting-edge research, introductions to activities, substantial information provided in relation to communication with future generations, and the presentation of relevant environmental performance information. It didn't take me long to read through it. I think that it is designed in such a way that anyone can easily pick it up and read it easily.

I would like to make a few remarks about the contents as well, focusing on the following three points.

1. Student participation: The sentiment that "We would like as many students as possible to know about the Environmental Report" was apparent in every part of the document, such as the cover design competition and the articles introducing current efforts, and I was left with a very favorable impression. After publication, I look forward to seeing the report also being disseminated through student initiatives, such as sharing on social media platforms.
2. Towards carbon neutrality: The report shows the head-on approach of both the university itself and its research and educational activities. A tendency for environmental burdens to increase due to measures related to post COVID-19 life can be seen in the environmental performance data, and this indicates that things will not be easy. However, I look forward the publication of mid- to long-term analyses and information on more specific efforts to be made in future (we would also like to learn from such information).
3. Constructing a recycling-oriented society: It is essential that we pivot towards resource recycling and a circular economy in order to realize a carbon-neutral society. There were many introductions to collaborative projects here, especially with Kobe City. It goes without saying that the creation of academic value is important, but I believe that social implementation in the community is also meaningful. I look forward to these activities having an even greater impact both within the university and beyond.

Reading this report, I was brought back to my beginnings. Thinking of the editor, each author, and the people introduced here Reading between the lines, I imagined various things, letting my mind wander. Allow me to express my deepest admiration for everyone involved and my gratitude for receiving this opportunity.

Name: Misuzu Asari
Current position: Associate Professor at the Graduate School of Global Environmental Studies, Kyoto University

Profile

2002: Graduated from the Graduate School of Engineering, Kyoto University
2004: Completed a PhD in Engineering at the Graduate School of Engineering, Kyoto University
2004: Academic Assistant, Environment Preservation Center, Kyoto University
2005: Instructor (Research Institution Researcher), Environment Preservation Center, Kyoto University
2006: Assistant, Environment Preservation Center, Kyoto University
2007: Assistant Professor, Center for Environmental Science, Kyoto University
2016: Associate Professor, Graduate School of Global Environmental Studies, Kyoto University

- Awards Received: FY 2010: Best Paper Award, Japan Society for Environmental Chemistry
  2011: Merit Award, Japan Society of Material Cycles and Waste Management
  FY 2017: Club Award, The Soroptimist Japan Foundation - Wakaba
  2021: Chairman's Award, Japan Society of Material Cycles and Waste Management
- Research Field: Environmental Education Theory
- Affiliations: Japan Society of Material Cycles and Waste Management, The Japanese Society for Environmental Education, University Environment and Safety Council, The Association of Environmental & Sanitary Engineering Research, 3R International Scientific Conference on Material Cycles and Waste Management

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/illustration)

Photo by Yuki Nissato,
2nd year PhD program student,
Graduate School of Intercultural Studies, Kobe University
Shooting location: Rokkodai 1st Campus
Photographer's comment: Although the campus is also beautiful with fresh greenery in spring, I took this photo because I thought the campus looked lovely colored by autumn.

Excellence Awards (Cover photo/illustration)

Photo by Yuta Asai,
Sophomore,
Department of Civil Engineering, Faculty of Engineering, Kobe University
Shooting location: In front of the Graduate School of Engineering D Wing / LR Wing

Photo by Hodaka Shiraki,
Senior,
Department of Chemistry, Faculty of Science, Kobe University
Shooting location: In front of the Graduate School of Science A Wing

■Date of issue: September 2022
■Created by the Center for Environmental Management
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