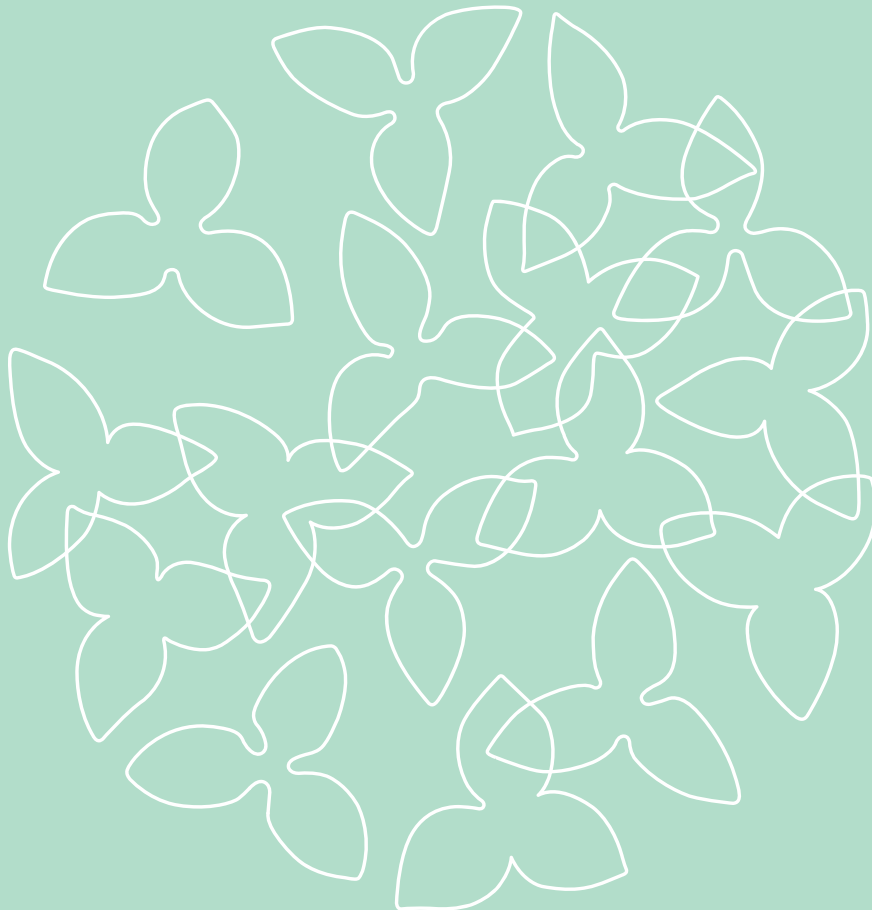




Hokkaido University Sustainability Report 2023





Message from the President

Pursuit of Sustainability towards the Realization of a Well-being Society

GRI 2-22

Thank you for taking the time to read the Hokkaido University Sustainability Report 2023.

Based on the four basic philosophies of Frontier Spirit, Global Perspectives, All-round Education, and Practical Learning, Hokkaido University has fostered some completely unique strengths—including (1) field research represented by one of the world's largest research forests and in-depth marine studies, (2) multiple outstanding world-leading research projects, (3) social development capabilities aimed at solving regional issues, and (4) the idea of sustainability linked to the SDGs, which the University has had from its inception.

In August 2021, Hokkaido University established the Institute for the Advancement of Sustainability, headed by the President. Operated by the two axes of the Sustainable Campus Management Office and the SDGs Initiative Office, the Institute has already launched numerous initiatives to build sustainable campuses and to contribute to education, research, and social cooperation in support of the SDGs.

Sustainability paraphrases the University's original philosophy, and has been the very DNA of its existence over the 150 years since its founding. This is supported by the Times Higher Education (THE) Impact Ranking 2023, released in June this year, which has ranked Hokkaido University 22nd

in the world, and 1st in Japan for four consecutive years.

In July this year, the University announced HU VISION 2030 as its mid-term vision, and is now pursuing a new Japanese university model, "Novel Japan University Model," which aims to exert a large social impact by solving global issues based on the two axes of excellence (excellence in education and research in science and technology) and extension (ability to expand education and research into society and to solve local issues)—which represent the University's unmatched identity cultivated over its 150-year history.

Aiming for even greater social impact, Hokkaido University endeavors to realize the universal goal of a "sustainable well-being society" through the growth and virtuous cycle of excellence and extension in the three fields of (1) the earth, (2) society, and (3) people, based on the pursuit of sustainability. We sincerely appreciate your support and cooperation.

HOUKIN Kiyohiro President, Hokkaido University

Born in Sapporo in 1954. Doctor of Medicine. Dr. Houkin graduated from the Hokkaido University School of Medicine in 1979, and has worked as a neurosurgeon at Hokkaido University Hospital and some private hospitals. He was appointed the Director of Hokkaido University Hospital in 2013, and is holding his current position since October 2020.

Location: Sapporo Agricultural College Experimental Farm No. 2

01

Pre-event leading up to the G7 Ministers' Meeting on Climate, Energy and Environment



The SDGs Initiative Office of the Institute for the Advancement of Sustainability held an event titled "Hokkaido University's Collaboration Toward a Zero Carbon Society - From global warming countermeasures, through biodiversity conservation to achieving the SDGs" on March 13, 2023. This was an online pre-event leading up to the G7 Ministers' Meeting on Climate, Energy and Environment in Sapporo held on April 15 and 16 of the same year. It provided the University an opportunity to collaborate with the local community and related organizations to consider ways of contributing to the resolution of global issues.

Symposium Report

https://www.sustainability.hokudai.ac.jp/wp-content/uploads/2023/04/23_G7_0418.pdf



Speakers from left:
YAMAGUCHI Shinobu, Director, United Nations University Institute for the Advanced Study of Sustainability; YOKOTA Atsushi, Executive Vice President of Hokkaido University; HOUKIN Kiyohiro, President of Hokkaido University; WADA Tokuya, Vice-Minister of the Environment; SUZUKI Naomichi, Governor of Hokkaido; AKIMOTO Katsuhiro, Mayor of Sapporo

Special Feature

Hokkaido University Highlights 2022

GRI 2-6, 203-2

02

Approval of Xocova® —Japan's First COVID-19 Treatment— in Collaboration with Shionogi & Co., Ltd.



On November 22, 2022, the Ministry of Health, Labour and Welfare approved the manufacture and sale of Xocova® Tablets 125 mg for the treatment of COVID-19 under the emergency regulatory approval system (general distribution began on March 31, 2023).

Xocova® is a therapeutic agent discovered by a group led by Professor SAWA Hirofumi of the then Division of Molecular Pathophysiology, International Institute for Zoonosis Control at the University, and Visiting Professor SATO Akihiko of Shionogi's Division of Anti-Virus Drug Research, in collaboration with Shionogi & Co., Ltd.

Anti-Virus Drug Development Research Team at the International Institute for Zoonosis Control
From left: Lecturer SASAKI Michihito, Visiting Professor SATO Akihiko, Professor SAWA Hirofumi, Associate Professor OBA Yasuko

03

Response to CDP Climate Change 2022 Questionnaire



The University submitted a response to the CDP Climate Change 2022 Questionnaire, recognizing the significance of not only advancing research, education and inter-university cooperation that contribute to carbon neutrality, but also to actively working toward carbon neutrality as a university management entity. As a result, the University received a “B” score (management level), indicating that it has made progress in establishing a system that addresses the risks

and impacts of climate change and with the implementation of measures to address them. This is a first for a university in Japan.

CDP questionnaires are sent at the request of institutional investors making ESG investments and major purchasing companies promoting supplier engagement to obtain environmental information on companies and organizations. The responses are analyzed and scored by CDP and used by investors around the world to make investment decisions.



Approved logo for use by responding institutions for the year



04

Participation in the 30by30 Alliance for Biodiversity

“30by30” is an international goal that seeks to effectively conserve at least 30% of land and ocean as healthy ecosystems to halt the loss of biodiversity and restore it by 2030. In Japan, the 30by30 Roadmap was published in April 2022, and the 30by30 Alliance for Biodiversity, a coalition of volunteers led by the Ministry of the Environment Japan was established.

The University, which owns a diverse range of fields, including vast campuses and research forests, where it has long been engaged in education, research, and management activities, joined the 30by30 Alliance for Biodiversity in June 2022.

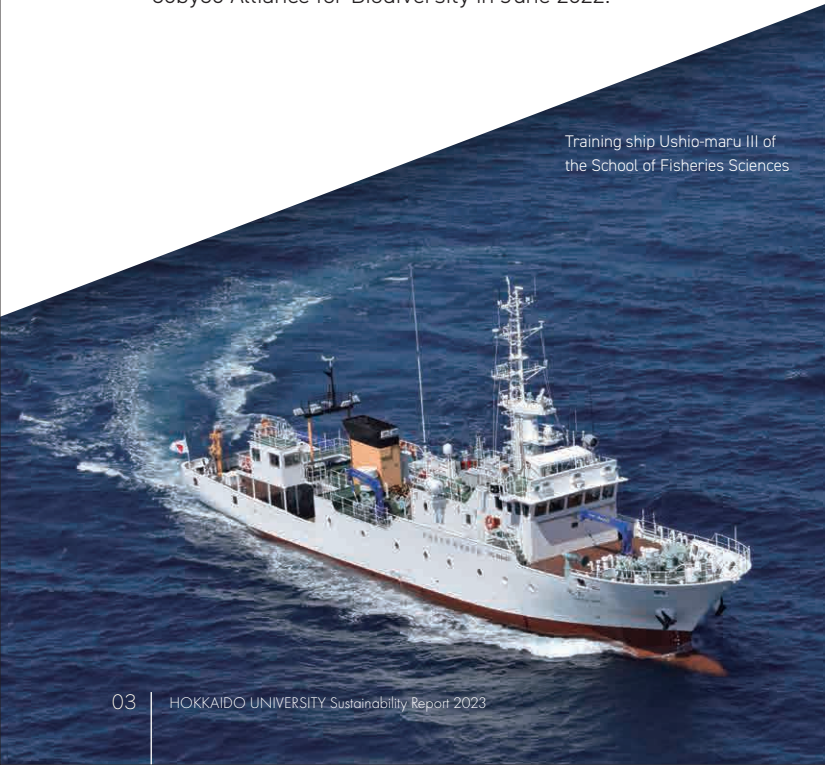


05

Training Ship Ushio-maru III of the School of Fisheries Sciences Completed

Construction of the training ship Ushio-maru III (45.62 m in length, 262 tons in gross tonnage), which is affiliated with the School of Fisheries Sciences, was completed, and a completion ceremony was held on November 4, 2022, at the Hakodate Research Center for Fisheries and Oceans. Equipped with state-of-the-art facilities that further improve safety and reduce fuel consumption, the vessel serves as a “laboratory at sea” for advanced and diverse research surveys and student training.

Training ship Ushio-maru III of the School of Fisheries Sciences



Overview of Hokkaido University and its Activities

Organizational Profile

GRI 2-1, 2-7

Hokkaido University is a flagship university with a strong emphasis on graduate studies, and its origins go back to Sapporo Agricultural College, established in 1876. The University will celebrate the 150th anniversary of its founding in 2026. As we approach this significant milestone,

we are deeply aware of the importance of the role a university must serve in society and have been boldly and steadily advancing the university reform based on our core principles and long-term goals toward “contributing to the resolution of global issues.”

Hokkaido University Facts (as of May 1, 2023)

- **Organization name:** Hokkaido University
- **Core function:** Education and research (12 undergraduate schools, 21 graduate schools, 17 faculties, 25 research institutes and centers)
- **Number of degrees conferred:** 242,319 (154,401 bachelor's degrees, 58,681 master's degrees, 1,918 professional degrees, 27,319 doctoral degrees)
- **Number of papers (2022):** 3,525* (source: Clarivate InCites TM as of Feb. 1, 2023) *The data for 2022 is for reference only, as many papers are unrecorded as yet.
- **Number of patents held:** 1,302 (national: 747; international: 555)
- **Campus locations:**
Sapporo Campus (Kita 8 Nishi 5, Kita-ku, Sapporo 060-0808)
Hakodate Campus (3-1-1 Minato-cho, Hakodate 041-8611)

● Land and buildings

Category	Land (m ²)	Buildings (total floor area, m ²)
City of Sapporo (Sapporo Campus)	1,776,247	798,427
City of Sapporo (other facilities)	1,112,319	31,297
City of Hakodate	105,149	37,694
Other local facilities	657,183,747	35,864
Total	660,177,462	903,282

- **Overseas office:** 1
Lusaka, Republic of Zambia (on the campus of the University of Zambia)
- **Number of faculty and staff members:** 3,920
- **Number of students:** 17,657

For details, please refer to *Hokkaido University Guidebook 2023*.

🌐 <https://www.global.hokudai.ac.jp/about/publications/hokkaido-university-guidebook/>



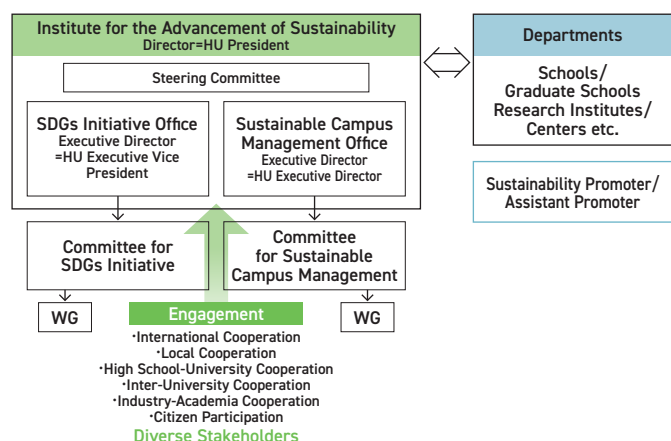
Framework for Sustainability

GRI 2-26

Institute for the Advancement of Sustainability

The Hokkaido University Institute for the Advancement of Sustainability is a platform for promoting education, research and social collaboration that contribute to the development of a sustainable society as well as a sustainable campus environment. It aims to realize a smart, green, sustainable campus through cooperation between two offices: the SDGs Initiative Office and the Sustainable Campus Management Office.

Structure of the Institute for the Advancement of Sustainability



Institute for the Advancement of Sustainability
🌐 <https://www.sustainability.hokudai.ac.jp/en>



Hokkaido University × SDGs
🌐 <https://sdgs.hokudai.ac.jp/en>



Basic Philosophies and Strategies

GRI 2-23

4 Basic Philosophies of Hokkaido University

- Frontier Spirit
- Global Perspectives
- All-Round Education
- Practical Learning

Future Strategy for the 150th Anniversary of Hokkaido University Formulated in March 2014
Goals of university reform for the 150th anniversary

HU VISION 2030 Formulated in July 2023
Medium-term vision to achieve both “excellence and extension”

Fourth Period of Mid-Term Goals and Mid-Term Plan
Six visions for FY 2022 to FY 2027

Research

Education

Collaboration

Management

Data

Finance

Contributing to the resolution of global issues (achievement of the SDGs)

Sustainability Policies and Measures

GRI 2-23

Hokkaido University Environmental Policy
Formulated, September 5, 2005

[Basic Philosophy]

Hokkaido University will play a central role in Japan’s academic research and human resource development of researchers, and as a national university that supports the foundation of Japan’s knowledge in the 21st century, it will protect the environment from the global level to the regional level through all activities, and strive to build a sustainable society.

[Basic Policy]

To concretely realize the basic philosophy, Hokkaido University will establish an environmental management implementation system and will set and implement environmental goals on the following with the participation of all persons on campus, including faculty, staff, and students. The University will also publicize the goals to everyone on campus, including faculty, staff, and students, as well as the general public to establish continuous environment-conscious activities.

1. Consideration for the global and local environments through education and research

To foster highly specialized human resources and produce outstanding research results through the promotion of education and research related to a wide range of global and regional environmental issues

2. Contributions to society through the dissemination of environmental information

To contribute to a better understanding of environmental considerations in the local community and society at large by disseminating and raising awareness of the results of education and research related to the environment

3. Reduction of the environmental load associated with university management

To reduce the environmental load through energy conservation, resource conservation, recycling of resources, promotion of green purchasing, and thorough management of chemical substances

Main Measures for Building a Sustainable Campus

Four Basic Philosophies

Hokkaido University Environmental Policy

Hokkaido University Future Strategy 150

Campus Master Plan 2018 (CMP 2018)
Campus space planning goals, and guidelines for facility and physical environment maintenance and management

Action Plan for Building a Sustainable Campus 2012/2016 (SCAP2012/2016)
Education/research × Campus management

Sustainable Campus Management Methodology

GRI 2-18, 3-1, 3-2, 3-3, 203-2

The Concept of a Sustainable Campus

A "sustainable campus" is a university that contributes to build a sustainable society through education, research, social cooperation, and campus development. It refers to the development of education and research rooted in social issues

as a university-wide policy and the implementation of campus development in harmony with the surrounding community, thereby supporting the well-being of society in practical and multifaceted ways.

*Goals associated with the selection of finalists at the International Green Gown Awards 2019

Assessment System for Sustainable Campus (ASSC)

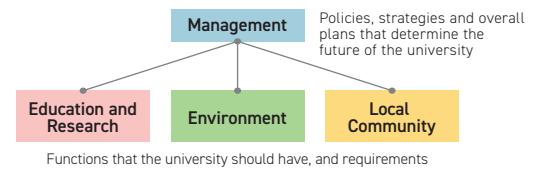


The Assessment System for Sustainable Campus (ASSC) is a questionnaire-based assessment system that takes a general and holistic view of university activities and identifies basic elements necessary to achieve campus sustainability as assessment criteria.

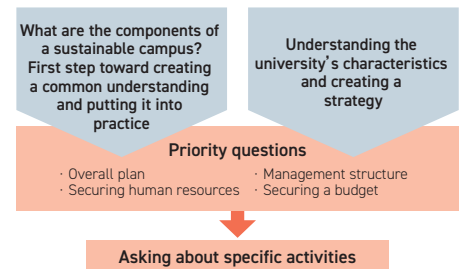
The ASSC was developed by Hokkaido University in 2013 and has been widely used at various universities, both domestic and foreign, since 2014. It is currently operated by the Campus Sustainability Network in Japan (CAS-Net JAPAN) (registered schools: 126 in cumulative total; schools that have submitted responses: 109 in cumulative total, as of February 2023).

Concerning submitters, CAS-Net JAPAN certifies them as gold or platinum according to the percentage of points scored.

Features: Assessment in 4 categories



Objectives



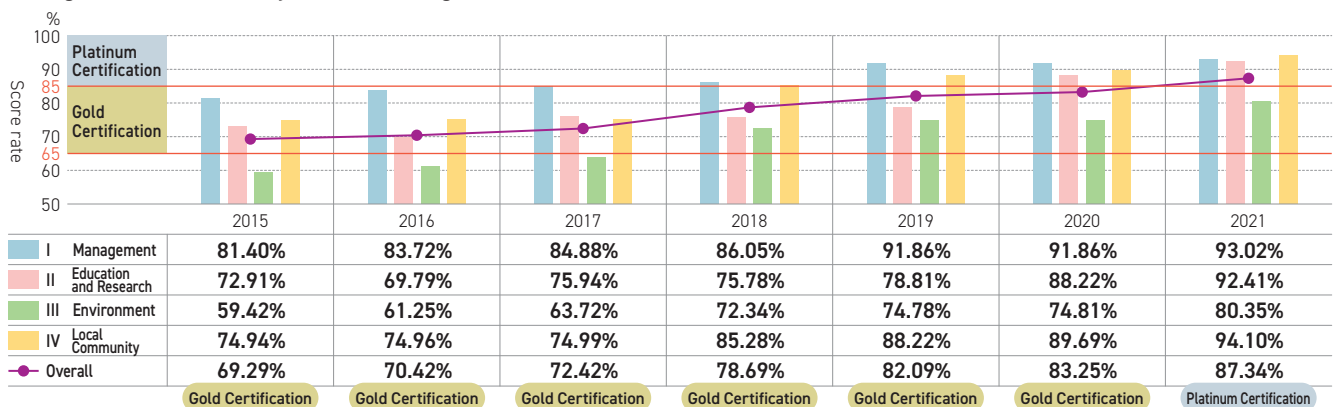
Received Platinum Certification, the Highest Rank in the ASSC

The University utilizes the ASSC for "Check" in the PDCA (Plan → Do → Check → Act) cycle to realize campus sustainability to continuously review and improve campus operations. Through the accumulation of past activities, the University's ASSC ratings have steadily improved in all four categories, achieving gold certification from FY 2015 to FY 2020, and then platinum certification, the highest level of certification, in FY 2021 for

the first time.

While conducting the ASSC evaluation every three years, the University will promote further activities, focusing on the planning and implementation of specific initiatives for improvement from the perspective of building a university-wide, medium- to long-term sustainable campus.

Changes in the University's ASSC Rating (FY 2015-2021)



Sustainability Activities

GRI 2-6, 203-2

First in Japan in the Overall Ranking of THE Impact Ranking 2023 for the Fourth Consecutive Year

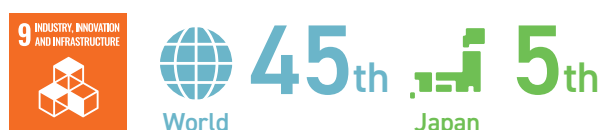


Times Higher Education, a UK-based higher education magazine, released THE Impact Rankings 2023 on June 1st, 2023. Hokkaido University is ranked 22nd in the world—and 1st in Japan, for the fourth consecutive year—out of the 1,591 universities that targeted the overall ranking. The THE Impact Rankings assess universities' contributions to achieving the United Nations' Sustainable Development Goals (SDGs). Participating universities are evaluated based on submitted

data and metrics from external sources.

Out of the 17 SDG targets, Hokkaido University is ranked within the global top 100 in the following categories: SDG 2: Zero Hunger (68th), SDG 6: Clean Water and Sanitation (95th), SDG 9: Industry, Innovation and Infrastructure (45th), SDG 14: Life Below Water (27th), SDG 15: Life on Land (17th), SDG 17: Partnerships for the Goals (53rd).

Rank by SDG (in the top 100 in the world)



Rumoi High School × Hokkaido University SDGs and Zero Carbon Project



In FY 2022, the Rumoi District Bureau of Education, Hokkaido Office of Education conducted a project in which high school students explore issues related to SDGs and zero carbon in the Rumoi region in cooperation with the University, and disseminate the results to promote understanding of SDGs and zero carbon among local residents and change their behavior. The University provided educational support to students of Rumoi High School for over six months, conducting workshops, fieldwork, and other activities. Ten students from the high school and students and faculty members of the University participated in the project, working on the themes of “New Possibilities of Wind Power Generation” and “The Perils of Unfamiliar Plastics.”

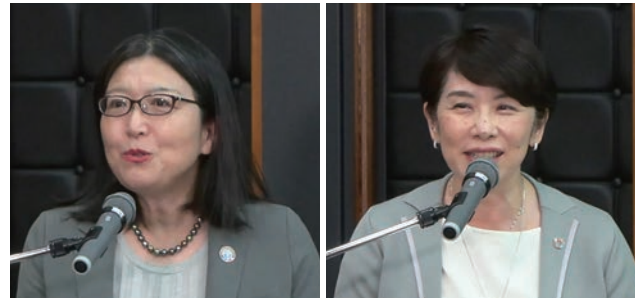


Professor KATO gives a lecture to students of Rumoi High School at a pre-workshop on July 11, 2022.

Institute for the Advancement of Sustainability Symposium 2022 Current Status of World Food Production Sites and Food Security



In honor of the University's remarkable accomplishment of securing the 10th position globally in the overall ranking and achieving the pinnacle spot worldwide in the SDG 2: Zero Hunger by SDG in THE Impact Ranking 2022, the Institute for the Advancement of Sustainability Symposium 2022 was held on September 13, 2022. The event featured keynote speeches by Ms. HIBI Eriko, Director of the Food and Agriculture Organization of the United Nations (FAO) Liaison Office in Japan, and Ms. IMOTO Sachiko, Senior Vice President of the Japan International Cooperation Agency (JICA), as well as a report on the University's activities and a panel discussion. Approximately 200 people from inside and outside the University participated online and considered how they could contribute to the world's food problems.



Director HIBI of FAO Liaison Office in Japan speaks on "The Current Status of Global Food Security."

Senior Vice President IMOTO speaks on "SDGs and Global Agricultural Challenges."

Report on the Institute for the Advancement of Sustainability Symposium 2022
Only available in Japanese

<https://www.sustainability.hokudai.ac.jp/11369/>



FD/SD Training via Online + Video Distribution + Caravan to each faculty



The SDGs Initiative Office of the Institute for the Advancement of Sustainability conducted online FD/SD* training, "Efforts to Achieve the SDGs and Educational and Research Activities at Hokkaido University" on June 28, 2022. YOKOTA Atsushi, Executive Vice President, and DEMURA Makoto, Assistant to the President, gave lectures on "The History of Hokkaido University's Development and SDGs" and "SDG-related Education of Hokkaido University Faculty." Subsequently, lectures were distributed as on-demand videos on campus, and 14 on-site training sessions were held at various departments, with a total of 642 participants. Involving all faculty and staff, this program fostered a sense of engagement = unity on campus and improved the overall strength of the University.



FD/SD training on June 28, 2022 was conducted as an open seminar.

*FD = Faculty Development
SD = Staff Development

Partnership Agreement with Sumitomo Corporation on the Use of Geothermal Heat



The Institute for the Advancement of Sustainability and Sumitomo Corporation signed a partnership agreement regarding a project to introduce renewable energy, centered on the use of geothermal heat at the University's campus on July 28, 2022. A joint study on the installation of a system to utilize geothermal heat for heating and cooling on the University's campus was initiated in 2022. Efforts will be made to create a system that effectively utilizes heat between buildings, such as using the heat emitted by geothermal cooling to supply hot water in another building. The future goal is to realize a heat supply system that helps reduce greenhouse gas emissions, and thus contribute to a carbon-neutral society.

ASCN 2022 Conference



The Campus Sustainability Network in Japan (CAS-Net JAPAN) and the Hokkaido University Institute for the Advancement of Sustainability held the Asia Sustainable Campus Network (ASCN) 2022 Conference on November 24, 2022.

The third annual conference was held under the theme, "What is the current meaning of Sustainable Campus? in an unstable era faced with many crises" The participants discussed the meaning of sustainable campus in the face of various challenges such as climate changes and destabilization of the global situation.

In the student presentation session, 12 teams from 4 countries gave presentations on their university's sustainability initiatives. The "1st PLACE AWARD (1 team)" and "EXCELLENT AWARD (4 teams)" were awarded to the most outstanding presentations, a student presentation in the "Special Exercise for Planning and Design I," an educational program produced by the Faculty of Engineering and the Sustainable Campus Management Office, received the "1st PLACE AWARD", the highest award.



Student presentation session award ceremony



1st Place Award Certificate

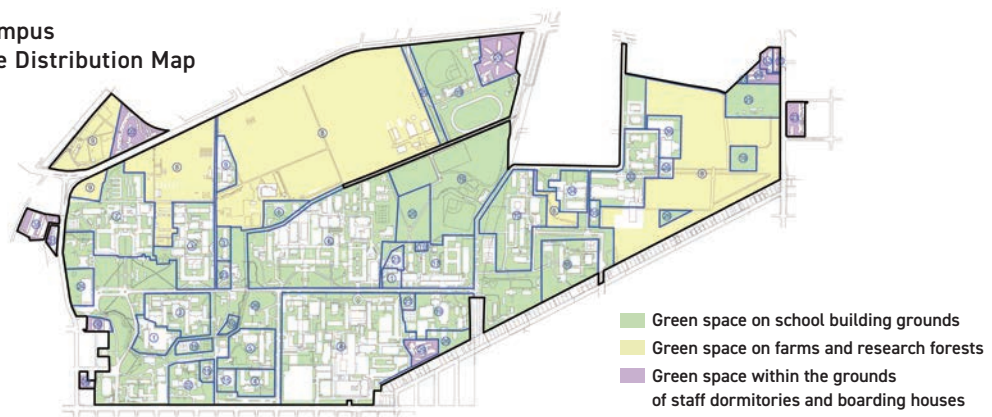
Revision of the Policy on Ecosystem Preservation and Management



Although the Sapporo Campus of Hokkaido University is located in the center of Sapporo City, the ecological environment has been well preserved over the years, with representation of diverse flora and fauna, including rare species, and the campus itself is a place for academic research and education on the natural environment. The University has formulated its Policy on Ecosystem Preservation and Management, a basic policy established to achieve zoning of the ecological environment and continual involvement in its conservation, maintenance, and utilization. In FY2022, green space distribution data for Sapporo Campus

was created using Geographic Information System (GIS), and the latest green space area and green space ratio were calculated, and green space distribution map was created, while collaborating with students in the Laboratory of Ornamental Plants and Landscape Architecture, Department of Agrobiology and Bioresources, School of Agriculture. Based on these results, the "Ecological Environment Conservation Management Policy" was partially revised. The results will be used as basic data for the formulation of the next Campus Master Plan for the Sapporo Campus and for planning to achieve carbon neutrality.

Sapporo Campus Green Space Distribution Map



Accreditation, Projects and Adoption

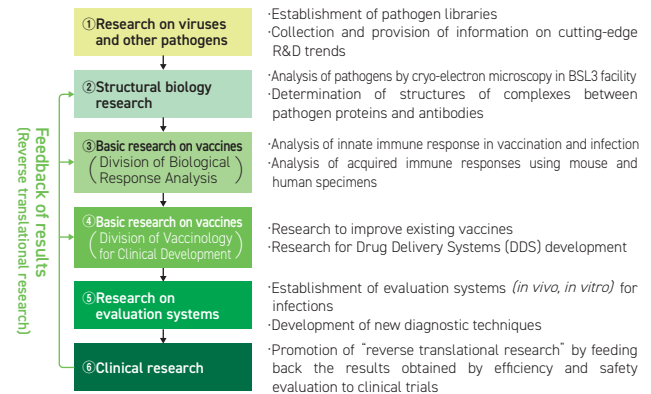
GRI 2-6, 203-2

Establishment of the Institute for Vaccine Research and Development



The Institute for Vaccine Research and Development (IVReD) was established in October 2022 at the Creative Research Institution, Hokkaido University. IVReD was selected as a synergy center along with the University of Tokyo (flagship center), Osaka University, Chiba University, and Nagasaki University (synergy centers) by the Japan Agency for Medical Research and Development (AMED) 's "Japan Initiative for World-leading Vaccine Research and Development Centers" projects. This institute promotes studies on zoonotic respiratory diseases, particularly Influenza, Coronavirus diseases and Tuberculosis, to develop domestically produced vaccines with the mission of "Innovative Research and Development" and "Social Implementation and Capacity Building".

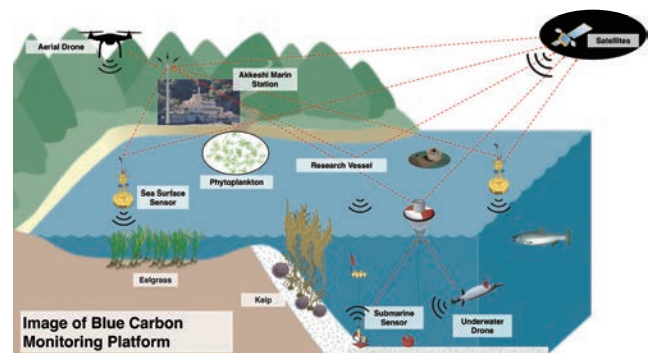
Flow of Research and Development at IVReD



Establishment of the Social Innovation Division for Planetary Boundary jointly with Sony Group



The University and Sony Group Corporation have jointly established the Social Innovation Division for Planetary Boundary within the University. Research is being conducted on three themes: 1) Innovative Smart Agriculture (led by Professor NOGUCHI Noboru, Research Faculty of Agriculture), 2) Regenerative Agriculture (led by Associate Professor UCHIDA Yoshitaka, Research Faculty of Agriculture), and 3) Blue Carbon Sensing (led by Professor NAKAOKA Masahiro, Field Science Center for the Northern Biosphere). With the aim of creating new industries and innovative applications, demonstration experiments are being conducted to implement the technologies and solutions to be developed in society.

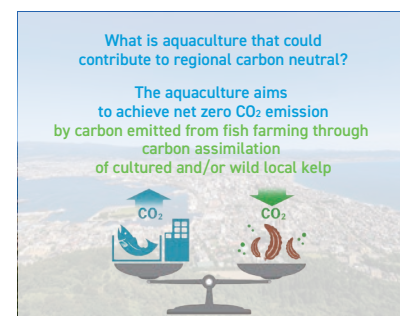


3) Blue Carbon Sensing

Project for a Sustainable Fishery and Marine City



"Development of a Sustainable Fishery and Marine City with Fish and Seaweed Cultivation at its Core - Toward the Establishment of Aquaculture that Contributes to Regional Carbon Neutrality," is the title of the project in which the University participates, and of which the plan was submitted by Hakodate City. It was selected as a grant project for FY 2022 under the Cabinet Office's Regional University and Industry Creation Grant. The aim of this project is to build a sustainable fishery and marine city by forming an aquaculture industry cluster in the region and attracting businesses and young people to settle in the region by offering practical education, research, and human resource development opportunities. The University calls this project the "Hakodate Mariculture Project," which is involved in research and development of the first facility performing total cultivation of king salmon and kelp in Japan.



Hokkaido University and Aisin Establish Industry Creation Course



The University and Aisin Corporation have established the Aisin Hokkaido University R&D Lab, an industry creation course in comprehensive catalyst research on biomass and CO₂ resource conversion, at the Institute for Catalysis.

The aim of the industrial creation course is to transform biomass and CO₂ into useful resources. It specifically focuses on the development of new catalysts capable of highly selective molecular conversion and the creation of catalytic reactions to achieve highly efficient conversion of biomass and CO₂ into resources.



Research and Education

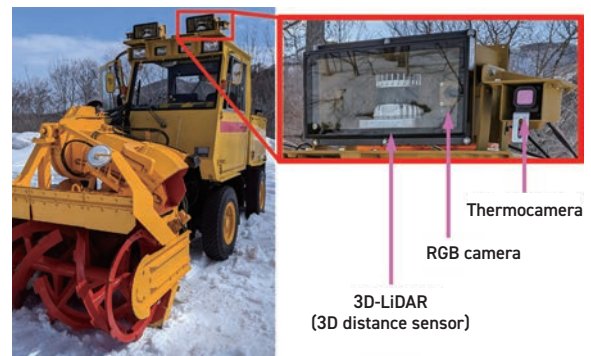
GRI 2-6

Development of AI-based Unmanned Snowplow and Delivery Vehicle Technology



Associate Professor EMARU Takanori of the Faculty of Engineering conducts research based on robotics, information technology, and artificial intelligence (AI) with a view to improving the safety of snow removal and automating agricultural work. One of the related research themes is the development of a real-time human detection system for sidewalk snowplows, which is being conducted in collaboration with NICHIGO Corporation. The system features high accuracy that is not affected by weather conditions, and a demonstration test was conducted on the Sapporo Campus in February 2023 to confirm the system's performance in a similar environment as an actual snow removal site.

The goal is to implement the system in the community with the eventual goal of realizing an automated snowplow in the future.



Lectures to Understand the SDGs



The University is committed to education on the SDGs. Undergraduate students learn about the SDGs in the introductory course of the University-wide educational program titled, "Understanding Global Issues." The Hokkaido Summer Institute (HSI) 2022, which welcomed students not only from our university but also from other domestic and international universities, offered a course titled, "Introduction to Sustainable Development Goals (SDGs)." Lectures were given on practical topics ranging from basic knowledge of environmental issues to the 17 goals of the SDGs, the framework for their implementation, and the role of the United Nations.



Discussions with Stakeholders

GRI 2-17, 2-29

Administrative Council and Stakeholder Conference

The Administrative Council is composed of University officers, external councilors with broad and deep insight into the University, and other members. It deliberates on important matters related to the management of the University. At the 3rd Administrative Council meeting held in September 2022, opinions were exchanged on the "Promotion of Sustainability and Zero Carbon Strategy," and various discussions took place.

In March 2021, the Stakeholder Conference was established to create an environment that incorporates the opinions of external experts. In addition to exchanging opinions on different themes each time, depending on the theme, attendees are nominated to participate in in-depth discussions on university management and strategies, and the opinions of the external committee members are actively reflected in the corporate management.

Performance Report Environment

Environmental Initiatives

GRI 302-1, 302-3, 303-3, 303-4, 303-5, 305-1, 305-2, 305-4, 306-1, 306-2

Material Balance



The University quantitatively assesses the environmental impact generated by all of its business activities and strives to reduce and properly manage the concerned impact.

Material Balance (FY 2022) *Sapporo: Sapporo Campus, Hakodate: Hakodate Campus

Input	Output
<p>Primary energy</p> <ul style="list-style-type: none"> Electricity 1,162,623GJ ([Sapporo] 1,128,240GJ+ / [Hakodate] 34,383GJ) Heavy oil 12,512GJ ([Sapporo] 12,512GJ+ / [Hakodate] 0GJ) Kerosene 3,005GJ ([Sapporo] 3,003GJ+ / [Hakodate] 2GJ) Gas 527,942GJ ([Sapporo] 520,749GJ+ / [Hakodate] 7,193GJ) <hr/> <p>Office supplies</p> <ul style="list-style-type: none"> Paper 139.15t ([Sapporo]+ / [Hakodate]) "Green purchase" items 179items ([Sapporo]+ / [Hakodate]) <hr/> <p>Amounts of chemicals handled</p> <ul style="list-style-type: none"> Chemicals controlled under the PRTR Law [Sapporo] 43,410kg *None in Hakodate <hr/> <p>Water</p> <ul style="list-style-type: none"> Municipal water 160,101m³ ([Sapporo] 141,151m³+ / [Hakodate] 18,950m³) Well water 627,254m³ ([Sapporo] 575,954m³+ / [Hakodate] 51,300m³) <p>*Hakodate Campus well water consumption is an estimate due to meter failure.</p>	<p>Greenhouse gas</p> <ul style="list-style-type: none"> Carbon dioxide 91,927t-CO₂ ([Sapporo] 89,669t-CO₂+ / [Hakodate] 2,258t-CO₂) <hr/> <p>Waste</p> <ul style="list-style-type: none"> General waste 8,332m³ ([Sapporo] 7,906m³+ / [Hakodate] 426m³) <p>[Sapporo] breakdown: Combustibles 4,596m³ / Non-recycle plastic and papers 450m³ / kitchen waste 208m³ / bottles, cans and PET bottles 2,652m³</p> <p>[Hakodate] breakdown: Combustibles 426m³ / Non-recycle plastic and papers 7.7m³ / bottles and cans, PET bottles 2.5m³</p> <ul style="list-style-type: none"> Waste paper 530t ([Sapporo] 526t+ / [Hakodate] 4t) Industrial waste 1,982t ([Sapporo] 1,965t+ / [Hakodate] 17t) (other than infectious waste) Infectious waste [Sapporo] 639t + [Hakodate] 0.05t <hr/> <p>Experimental waste fluid</p> <ul style="list-style-type: none"> Inorganic waste fluid 18,077L ([Sapporo] 17,202L+ / [Hakodate] 875L) Organic waste fluid 111,286L ([Sapporo] 108,129L+ / [Hakodate] 3,157L)

Energy Consumption and Renewable Energy Generation Initiatives

GRI 302-1, 302-3, 302-4, 302-5

Primary Energy Consumption



Primary energy consumption (FY 2022)

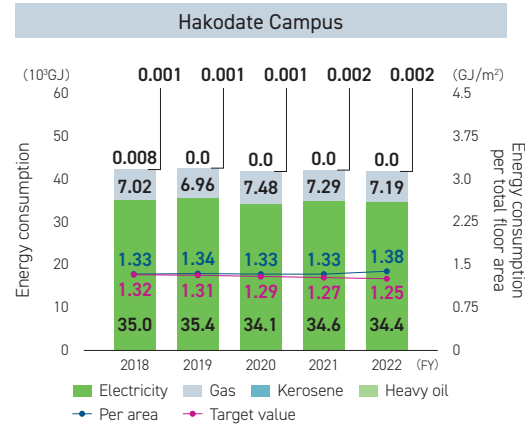
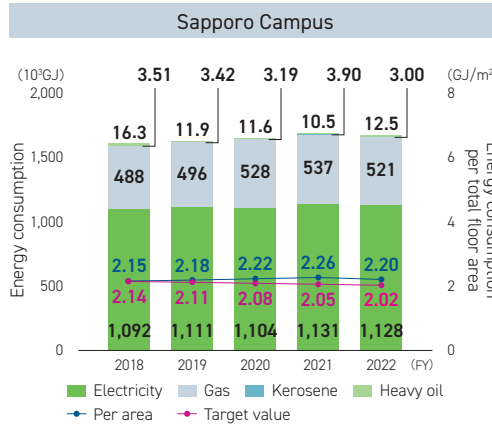
Electricity
1,162,623GJ

Gas
527,942GJ

Kerosene
3,005GJ

Heavy oil
12,512GJ

Conversion factors by energy type
Electricity 9.76 MJ/kWh
Gas 45.0 MJ/m³
Kerosene 36.49 MJ/L
Heavy oil 38.9 MJ/L



Note 1: 2018: Usage decreased due to the impact of the Hokkaido Eastern Ibari Earthquake. Note 2: 2018 – 2020: These values include private use. The energy conservation target is a 1.5% reduction per year in the basic unit for primary energy consumption on the Sapporo and Hakodate campuses (source: Action Plan for Building a Sustainable Campus 2016). That target is planned to be reset during the Fourth Period of the Mid-Term Plan.

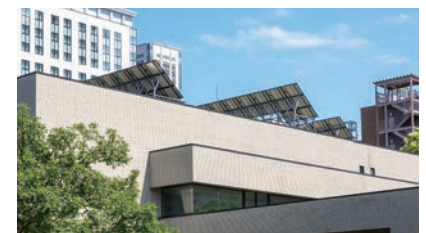
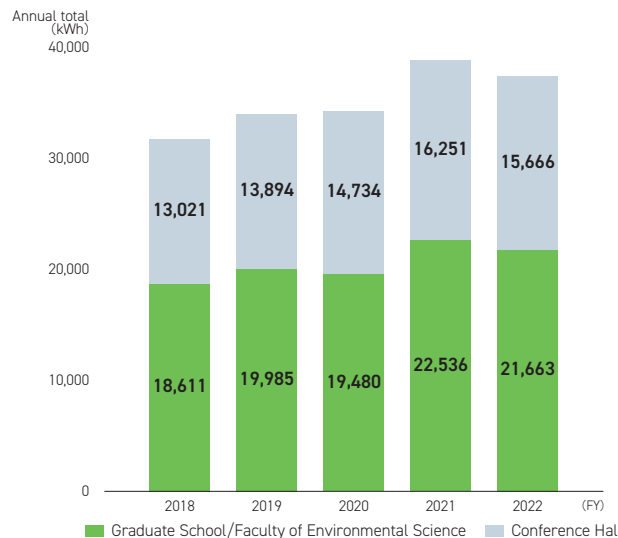
The University has set a target of a 1.5% decrease in specific consumption annually from the FY 2015 baseline, which is higher than the effort target of reducing the 5-year average specific consumption by at least 1% per year in the Act on Rational Energy Use. However, we have not been able to achieve this target, thus we need to consider drastic measures or re-setting of the target.

Renewable Energy (Solar) Generation

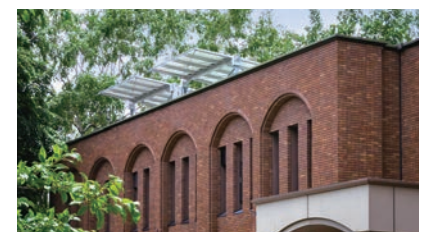


Self-generated power/solar (FY 2022)

Self-generated power/solar
37,329kWh



Conference Hall



Graduate School/Faculty of Environmental Science

Note 1: In 2018, power generation in the Conference Hall increased rapidly because of maintenance performed on the electrical room equipment. Note 2: From FY 2020, figure is estimate due to the failure of the management equipment terminal.

Energy Conservation Initiatives

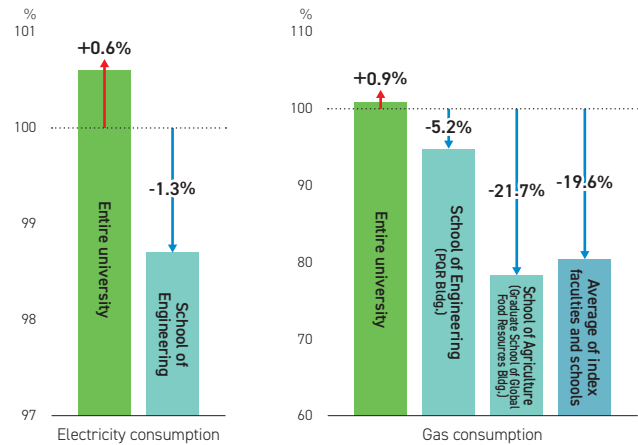
GRI 302-4, 302-5, 305-5

Centralized Air Conditioning Controllers to be Utilized University-wide



As part of the Campus Master Plan 2018 Action Plan "Thorough energy management throughout the University" (March 2020, Executive Office for Campus and Environment Planning), we are working to utilize centralized air conditioner controllers university-wide (timer-controlling air conditioners to reduce wasteful operation), expected to provide steady energy-savings without additional costs. In FY 2022, the control system was newly installed in the School of Engineering and the School of Agriculture.

Comparison of usage: FY 2022 versus FY 2021



Deep Freezer Energy Savings Study and the Publication of a Related Guide



The University has been working to reduce its environmental impact with the aim of building a sustainable campus. As a part of such activities, we focused on the 1,413 deep freezers (ultra-low temperature freezers) on campus, which consume a huge amount of power and contribute to base power consumption. After obtaining an understanding of the deviation between equipment specifications and actual power consumption through actual measurements, we have studied energy-saving measures and used the results to compile a guide. From now on, we will strive to saving energy in accordance with the guide.



Guide to Energy Conservation Measures (Deep Freezer Edition)

Pursuit of ZEB Specs in New University Buildings



Hokkaido University North Campus Research Building No. 8 (ICReDD building), completed in the spring of 2023 on the Sapporo Campus, has acquired certification equivalent to ZEB Ready (BELS evaluation). The energy-saving design know-how of the ICReDD Building has been applied to the design of the new buildings, pursuing ZEB specifications.

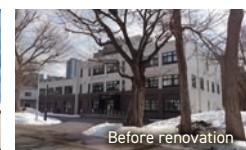
*Zero Energy Building (ZEB) is defined as building that aim to achieve annual primary energy consumption balance of zero while maintaining operations by saving energy as well as creating energy through the introduction of recyclable energy and other means.



ICReDD Building
New building design
in FY 2020 - 2021
Energy saving **55%**
Equivalent to ZEB Ready



Hakodate Campus New Building
New building design
in FY 2022
Energy saving **61%**
ZEB Ready
To be completed in spring 2024



Information Initiative Center
(South Building)
Renovation design
in FY 2022
Energy saving **41%**
Equivalent to ZEB Oriented
To be completed in spring 2024

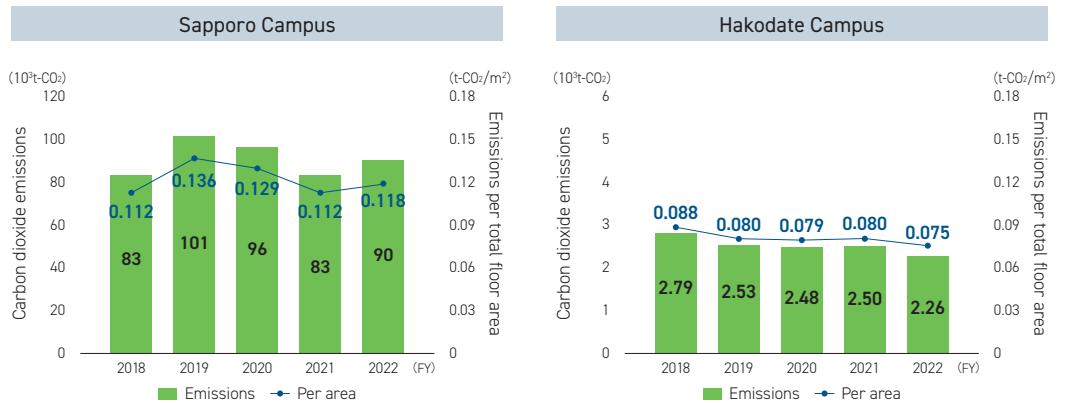
Greenhouse Gas Emissions and Carbon Neutral Initiatives

GRI 305-1, 305-2, 305-4, 305-5

Greenhouse Gas Emissions



Carbon dioxide
91,927 t-CO₂



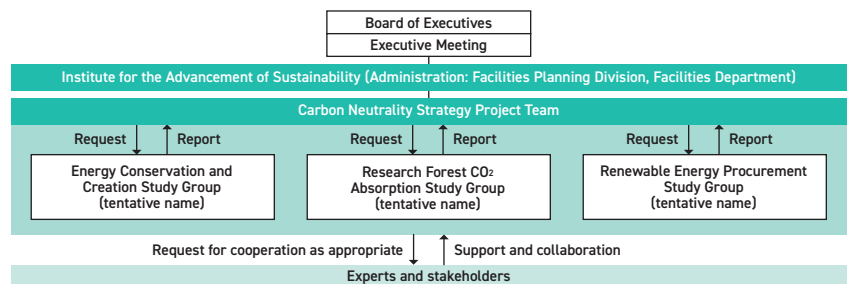
Note 1: In FY 2018, the adjusted electricity-derived CO₂ emission factor [kg-CO₂/kWh] used for calculations was 0.511 for the Sapporo Campus (new electricity supplier) and 0.678 for the Hakodate Campus. In FY 2019 it was 0.673 (April – June, new electricity supplier) and 0.656 (July – March, Hokkaido Electric Power Co.) for the Sapporo Campus, and 0.656 for the Hakodate Campus. In FY 2020, it was 0.601 for both campuses. In FY 2021, it was 0.473 for the Sapporo Campus and 0.601 for the Hakodate Campus. In FY 2022, it was 0.549 for both campuses.
 Note 2: 2018: Emissions decreased as a result of the Hokkaido Eastern Ibari Earthquake.

Greenhouse gas emissions were highest in FY 2012 at 113,196 t-CO₂ and have been declining since then. However, since most greenhouse gas emissions are derived from electricity, regardless of the University’s efforts to reduce emissions, the emissions fluctuate according to the carbon dioxide emission factors of the electric utilities.

Carbon Neutral Strategy Project Team Established



In November 2022, the Carbon Neutrality Strategy Project Team (“PT”) was established within the Institute for the Advancement of Sustainability to achieve carbon neutrality at the University. The university is considering a policy and roadmap for carbon neutrality through this PT.



Note: Each study group will be established as appropriate.

Joint Proposal with the City of Sapporo Selected as a “Decarbonization Leading Area”



The Ministry of the Environment has selected areas aiming to achieve virtually zero CO₂ emissions from electricity consumption in the civilian sector (households, businesses) by 2030 by leading decarbonization initiatives tailored to local characteristics as “Leading Decarbonization Areas.” The University, in collaboration with the City of Sapporo,

Hokkaido Gas, Hokkaido Heat Supply Corporation, Hokkaido Electric Power Company, and NOASTE, submitted a proposal entitled, “Sapporo: Aiming for a Zero Carbon City ‘SAPP_RO’ – Joint Academia-Industry-Government Snowy Cold Region Model,” which was adopted.

Water and Wastewater

GRI 303-2, 303-3, 303-4, 303-5, 306-1

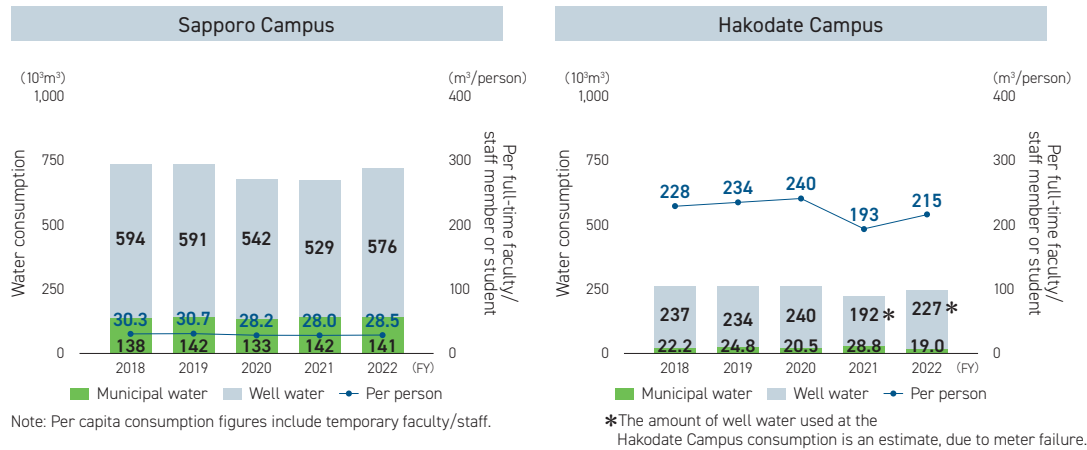
Water Consumption



Water consumption
(FY 2022)

Municipal water
160,101m³

Well water
627,254m³



Wastewater Management



The University is working to reduce emissions of chemical substances in accordance with the Hokkaido University Chemical Substances Management Regulations. Experimental waste fluid is collected and final treatment is outsourced. Since wastewater other than experimental waste fluid is

discharged into the public sewage system, water quality inspections of the campus wastewater routes are conducted once a month, and the results are reported to the local government. Periodic voluntary inspections are also conducted.

Effective Use of Well Water



Securing clean water is the foundation to build a sustainable society. Groundwater is an excellent water resource with only slight fluctuation in quantity throughout the year, and sustainable use of groundwater is essential to ensure clean water for the future. There are 16 wells on the Sapporo Campus, and well water is effectively used for various purposes, including drinking, flushing toilets, water sprinkling, landscaping, cleaning, animal breeding, farm use, and cooling facilities.

The City of Sapporo has designated emergency wells to supply water for domestic use to residents in the event of an earthquake or other disaster that cuts off the water supply. At the University, a total of 11 wells (e.g., Clark Memorial Student Center, Administrative Bureau, School of Agriculture, School of Engineering, Mid-Campus, Institute for the Advancement of Higher Education, School of Medicine), including wells in the Botanical Garden, have been designated as emergency wells to help secure water resources in the event of a disaster.

Department	Date of installation	Pump discharge (m ³ /day)
Clark Memorial Student Center	Mar. 28, 1977	3,184
Administration Bureau	Nov. 14, 1968	2,268
School of Agriculture	Nov. 15, 1966	3,184
School of Science (2)	Mar. 28, 1977	2,890
School of Engineering (1)	Dec. 11, 1998	2,998
School of Engineering (2)	Dec. 15, 1995	2,160
Mid-Campus	Dec. 2, 1965	2,408
Institute for the Advancement of Higher Education	Oct. 30, 1985	2,003
Hospital (outer well) south side	Aug. 3, 1963	2,703
Hospital (inner well) north side	Dec. 10, 1987	3,239
School of Medicine	Mar. 22, 1967	3,352
Keiteki-Ryo (student dormitory)	Nov. 30, 1981	668
Model Barn	Jan. 29, 2010	259
Horse Riding Club	Feb. 19, 1999	288
Creative Research Institution	Mar. 28, 2003	878
School of Dental Medicine No. 2 (north side)	Jan. 29, 2010	1,872

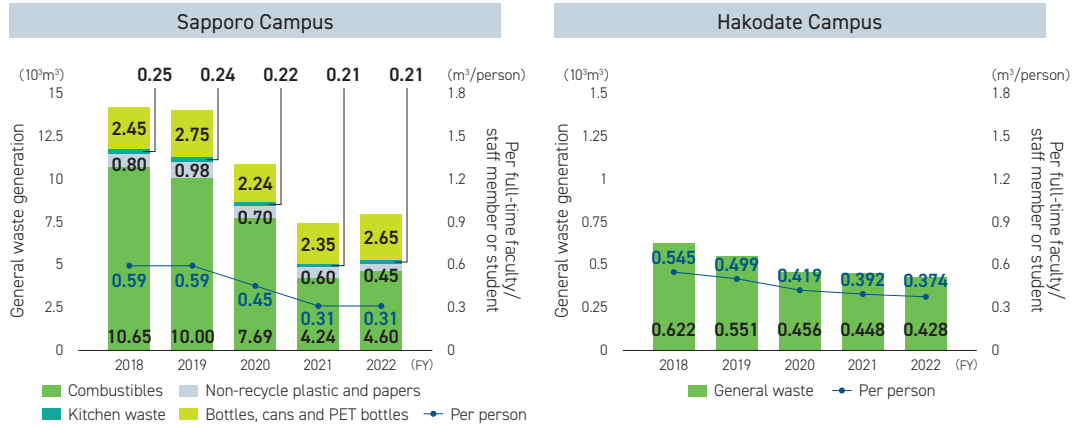
Waste and Resource Recycling

GRI 306-2

Waste Generation

General waste generation (FY 2022)

General waste
8,332m³



Note 1: Kitchen waste is generated at the University Hospital's kitchens where food is prepared.
 Note 2: Per capita generation figures include temporary faculty/staff.
 Note 3: Hakodate Campus General waste includes PET and other bottles.
 Note 4: The waste compaction project was phased in from FY 2016.

Industrial waste generation (FY 2022)

Industrial waste
1,982t

Infectious waste
639t

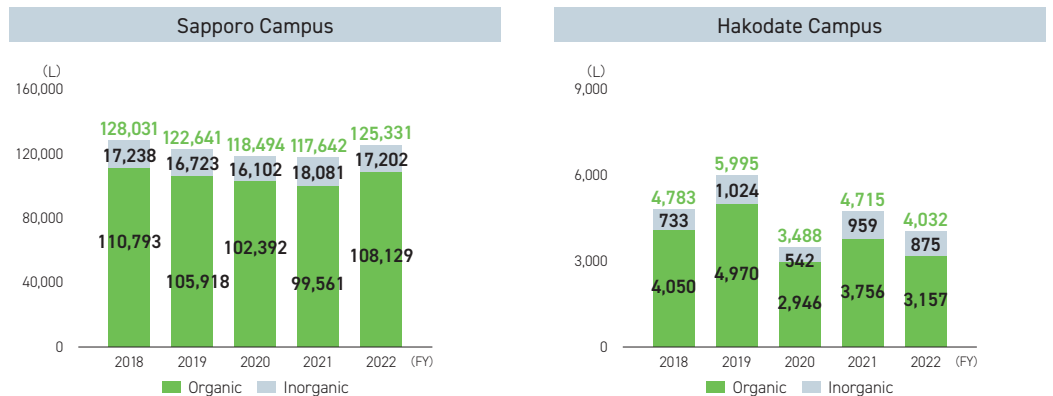


Note: The figures for the Sapporo Campus exclude items that fall under the Act on the Recycling of Specified Kinds of Home Appliances. Hakodate Campus figures include discarded electrical appliances.

Experimental waste fluid generation (FY 2022)

Organic
111,286L

Inorganic
18,077L



Note: Including local facilities

Biodiversity

GRI 304-1, 304-3

“Nature Experience Tours” Project with mont-bell Co., Ltd.



The Field Science Center for Northern Biosphere held its first nature experience event in collaboration with outdoor goods manufacturer montbell Co, Ltd. in the Tomakomai Experimental Forest on October 23 and 27, 2022. The event offered specialized research experiences, including fish ecological surveys, such as individual tracking using special equipment in a river that runs through the forest, and a trial ride on Japan’s only forest canopy crane to identify trees from above and observe changes in leaf morphology at different heights.



Science Café hosting Talk on Forests with Locals



The Northern Forest Science Café event has been held since FY 2022 under the auspices of the Northern Forestry Research and Development Office, Forest Research Station, Field Science Center for Northern Biosphere, to discuss forests of Hokkaido. Through introductions of research being conducted in the experimental forests and lectures by forestry workers, furniture makers, and craftsmen, the café aims to deepen understanding of the boreal forest and create a place where experts and citizens can casually discuss science.



Environmental Compliance

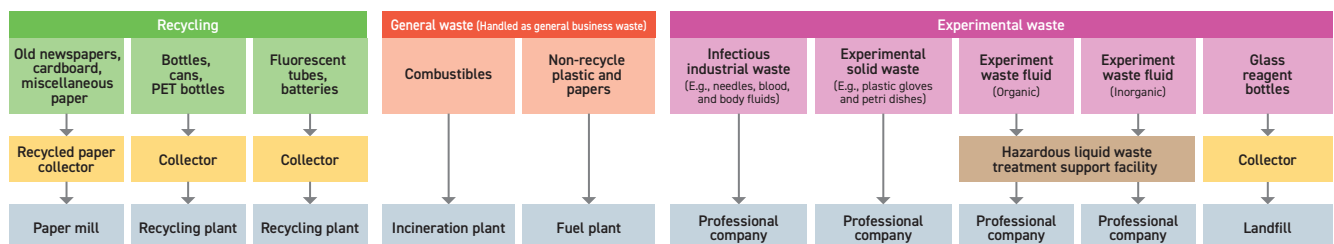
GRI 2-27, 303-2, 306-2, 306-4, 307-1

Waste Disposal Method



The University is implementing waste reduction, reuse and recycling under the theme of “a resource-recycling society in which all members of the University can participate.” It also clearly sets and transmits rules for the separation of general and experimental waste and proper disposal of such waste in accordance with management regulations.

Flow of recycling and waste disposal (main items)



Proper disposal of hazardous waste

The University is working to reduce emissions of chemical substances and to provide safety education based on the Hokkaido University Chemical Substances Management Regulations. Chemical substances are centrally managed under the University’s Chemical Substance Management System. The University manages the handling of chemical substances, collects experimental waste fluid, manages sewage effluent, and notifies the amount of emission transfers of substances subject to the Law concerning Pollutant Release and Transfer Registers (PRTR Law).

Reporting on Environment-related Laws and Regulations, and the Organizational Structure for Compliance with Laws and Regulations



In regards to environment-related laws and regulations (e.g., the Sewerage Service Act, the Air Pollution Control Act, laws and regulations concerning the proper disposal of waste, and energy conservation-related laws and regulations), we received recommendations by the regulatory authorities based on the Sewerage Service Act in FY 2021, and we have completed measures to improve the wastewater quality. There are no guidelines or recommendations from the regulatory authorities regarding other laws and regulations.

Departments and divisions in charge of environment-related laws and regulations

Laws and regulations	Department/division in charge
Sewerage Service Act	Sustainable Campus Promotion Division, Facilities Department
Air Pollution Control Act	Sustainable Campus Promotion Division, Facilities Department
Laws and regulations concerning the proper disposal of waste	Sustainable Campus Promotion Division, Facilities Department
Act on Rationalizing Energy Use	Sustainable Campus Promotion Division, Facilities Department
Act on Rational Use and Proper Management of Fluorocarbons	Sustainable Campus Promotion Division, Facilities Department
Home Appliance Recycling Act	Accountant of each faculty/school

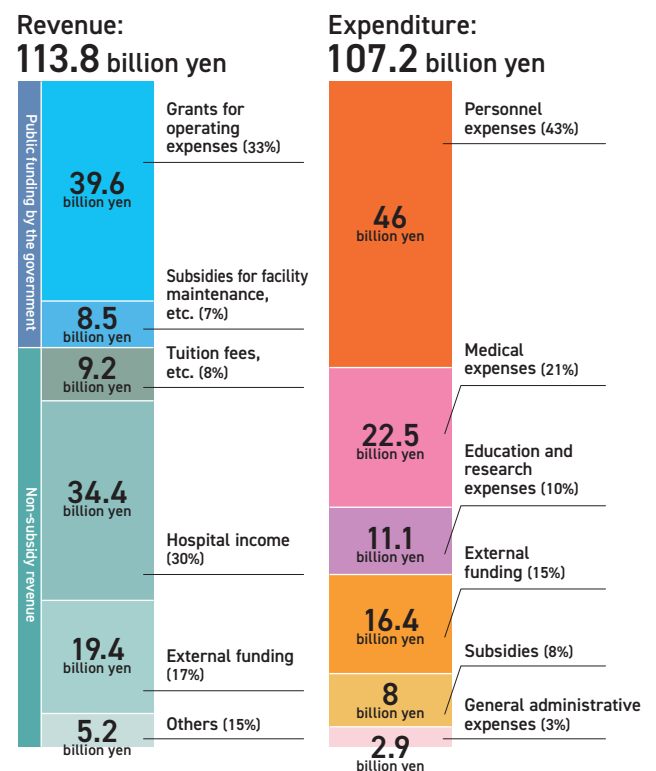
Performance Report Economy

Financial Structure in FY 2022 and Changes in Revenue and Expenditure

GRI 201-1, 201-4

Breakdown of Revenue and Expenditure Accounts

The financial statements of national university corporations are represented based on financial reports (cash basis), which are prepared in the same way as those of the national government. Half of their operating funds are financed by the government and the other half by their own revenues, and about half of their expenditures are personnel expenses.

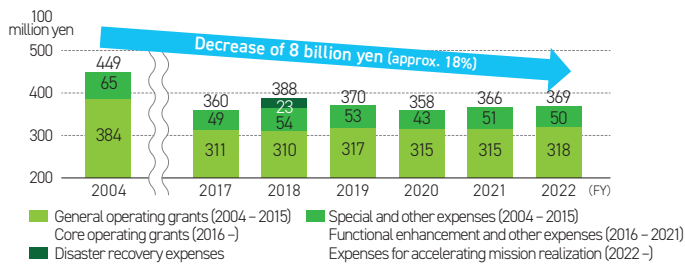


*All amounts are rounded down to the nearest unit, so totals may not add up.

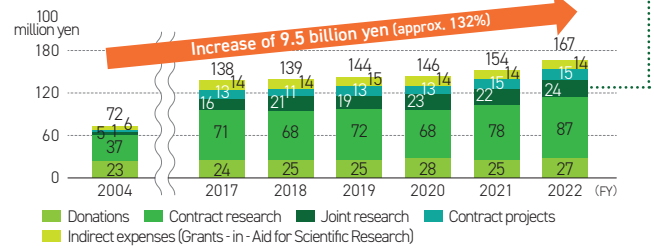
Changes in Revenue Breakdown

The subsidy for operating expenses granted by the government has been reduced by 8 billion yen compared to FY 2004, the initial year of incorporation. It is therefore necessary to improve management efficiency and take measures to increase the acquisition of external funds.

Changes in revenue from grants for operating expenses



Changes in external funding income



Contribution to and Collaboration with the Community

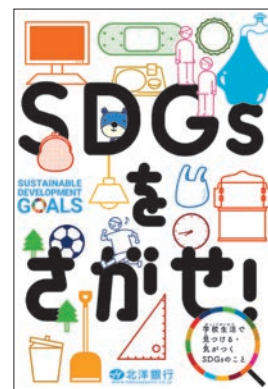
GRI 203-1, 203-2, 413-1

North Pacific Bank's Educational Material "SDGs wo Sagase! (Find the SDGs)"



The University's Institute for the Advancement of Sustainability played a supervisory role in the production of the SDG educational material for elementary school students titled "SDGs wo Sagase!" This educational material introduces 17 initiatives from the University, North Pacific Bank, and partner companies to achieve the SDGs with their slogans and illustrations.

This material was honored the Newcomer Award in the Sustainable Campus Award 2022, which recognizes outstanding initiatives for building a sustainable campus.



SDGs wo Sagase!, 2022 Edition



Introducing the Enyu Night School as an SDG 1 initiative

Government-Industry-Academia Collaboration Agreement with Furano City and Oracle Corporation Japan



The University, Furano City, and Oracle Corporation Japan signed a collaboration agreement to promote smart cities on October 27, 2022. The three parties began working on the Hokkaido University Doctoral DX Education Program: Smart City Promotion Support for Furano City, Hokkaido project, in FY 2021. The project involves doctoral students of the University who have analyzed data using Oracle's cloud services and proposed measures to address issues facing the city. Through this Government-Industry-Academia collaboration, the three parties aim to strengthen mutual cooperation, including continued implementation. In FY 2022, two themes

were addressed: "promotion of carbon neutrality by changing the energy-saving behavior of Furano citizens" and "acquisition of younger customers of Furano ski resorts."



Scene from the proposal presentation on March 28, 2023

Procurement Initiatives

GRI 204-1, 301-3, 308-1, 308-2, 414-1

Promotion of Responsible Trading and Procurement

The Hokkaido University Procurement Information website provides information on advertising for general competitive bidding and procurement results on environmental goods at the University.

Procurement results in FY 2022 (partial)

① Procurement of environmental goods

Outline: The following items were summarized and publicized in the procurement results of environmental goods.

- 1) Procurement status of specified items (generally 100% of items procured)
- 2) Environmental considerations on procurement of other goods and services
- 3) Evaluation of procurement performance for the current fiscal year

② Procurement of goods from facilities that employ people with disabilities

Results: The results of procurement of goods from facilities employing persons with disabilities of FY 2022, have been disclosed.

Policy: The policy for FY 2023 has been established and announced.

③ Contracts related to small and medium-sized enterprises

Policy: The policy on contracts related to small and medium-sized enterprises is publicly announced.



Performance Report Society

Social Collaboration

GRI 413-1, 413-2

Adopted as Japan’s First Smart Agriculture Education Center



The University was selected by the Ministry of Agriculture, Forestry and Fisheries for the 2022 Smart Agriculture Education Promotion Commissioned Project, the first university in Japan to be selected as a hub of smart agriculture education.

The first training session, on “Drone Utilization and Water Management System,” was held in July 2022 at the New Industrial Support Center in Iwamizawa City. In November, fifth graders from Sapporo Midorigaoka Primary School participated in a smart agriculture field trip to the Experiment Farm of the Field Science Center for Northern Biosphere.

As a hub for smart agriculture education in Japan, the University also develops and implements practical programs that combine classroom and hands-on training for the social implementation of smart agriculture, and promotes projects such as refresher training of working farmers, the preparation of online educational materials, and smart agriculture training of educators.

Smart agriculture education center: Hokkaido University



Development and Provision of various educational programs

<p>Training for working farmers</p>	<p>Preparation of online teaching materials</p>	<p>Training of educators</p>
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Establishment of the Office of Public Relations and Social Collaboration



In April 2023, the Office of Public Relations and Social Collaboration was established as an expert organization that integrates all tasks from planning to implementation and evaluation of the University's public relations, social collaboration, and brand strategies. The purpose of this organization is to develop co-creation with various organizations and stakeholders, to promote understanding and gain support for the University's management (enhancing the value of the Hokkaido University brand), and to significantly evolve and expand social collaboration through effective use of the University's facilities.

Agreement on Collaboration and Cooperation with the City of Sapporo



On December 21, 2022, the University and the City of Sapporo signed an Agreement on Collaboration and Cooperation with a signing ceremony marking the occasion. The purpose of this agreement is to contribute to the resolution of regional and social issues through mutual cooperation and development of the University's knowledge and human resources and the City of Sapporo's urban development. In the future, the University and the City of Sapporo will extend their cooperation in various fields and create new collaborations and added value.



President HOUKIN and Mayor AKIMOTO holding up the agreement certificate

Health and Safety

GRI 403-1, 403-2, 403-3, 403-4, 403-5, 403-6, 403-7, 403-8

Guidance and Supervision of Health and Safety from a University-wide Perspective



The University's extensive grounds include educational and research facilities in a diverse mix of specialized fields. In March 2011, the Office of Health and Safety was established as an organization to centrally monitor the status of health and safety management, and to plan, draft, and supervise such activities. In cooperation and collaboration with other departments and related organizations, various health and safety-related initiatives are undertaken, including periodic inspections by health managers, on-site inspections of life science facilities, and the preparation of various safety education, training, and educational materials.

Diversity, Inclusion and Indigenous Peoples

GRI 405-1, 412-1, 412-2

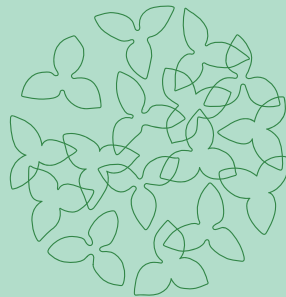
Partnership Agreement with Akan AINU Association, Kushiro AINU Association, Akan AINU Consarun, and Kushiro City



The Center for AINU and Indigenous Studies at Hokkaido University concluded a partnership agreement with the Akan AINU Association, Kushiro AINU Association, Akan AINU Consarun, and Kushiro City in February 2023. The university cooperates with Kushiro City to support AINU cultural events and develop a plan to promote AINU policies. The purpose of this partnership agreement is to organize support of the University regarding the promotion of AINU culture and to support international exchanges between the AINU people and overseas indigenous peoples.



Signing ceremony



HOKKAIDO UNIVERSITY

The Trillium flower is symbolic of Hokkaido University and used as its official logo. In this design, the flower symbolizes “human” by combining intelligence, individuality, and diversity. The overlapping elegant lines of the flowers represent human relationships and knowledge. The flowers’ silhouettes reflect academic and contemporary values, suitable for Hokkaido University.

Hokkaido University Sustainability Report 2023

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The Hokkaido University Sustainability Report 2023 is available on the Institute for the Advancement of Sustainability website. To access, scan the code at right.



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