HOKKAIDO UNIVERSITY
Environmental Report

FY 2009

Environmental Report

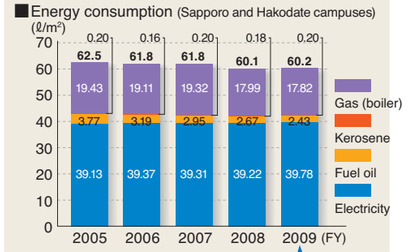
Abridged version

A perennial species blooming on Sapporo Campus

National University Corporation
Hokkaido University

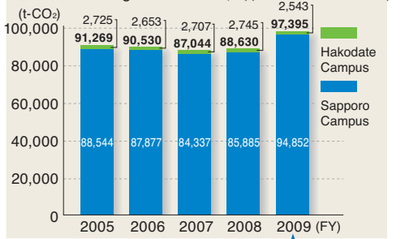
Major indicators

■Energy consumption (Sapporo and Hakodate campuses)



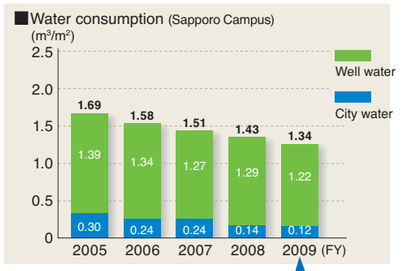
An increase of 0.2% on the previous year
(Despite the opening of new research facilities, energy consumption remained at the same level as in the previous year.)

■Greenhouse gas emissions (Sapporo and Hakodate campuses)



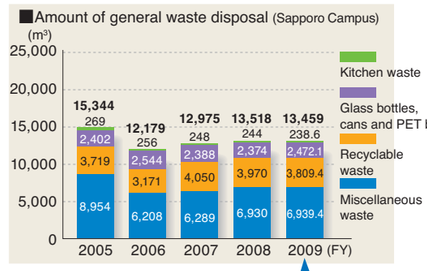
An increase of 9.9% on the previous year
(The significant increase in CO2 emissions was due to a change in the electricity conversion rate.)

■Water consumption (Sapporo Campus)



A decrease of 6.3% on the previous year
(Consumption of city water and well water has fallen due to advanced water-saving measures for laboratory equipment and water supply facilities.)

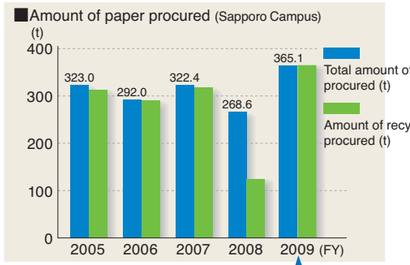
■Amount of general waste disposal (Sapporo Campus)



A decrease of 0.4% on the previous year
(Further waste reduction measures are necessary.)

Note: Kitchen waste is generated from the University Hospital's kitchen.

■Amount of paper procured (Sapporo Campus)



An increase of 35.9% on the previous year
(The increase was due to the many conferences and other events held; further steps are necessary to promote a paperless campus.)

■Hazardous air pollutant concentration on campus
(as of October 28, 2009)

Items (environmental quality standards)	School of Science	School of Pharmaceutical Sciences and Pharmacy	Faculty of Engineering	Northern Campus
Benzene (≤ 0.003)	0.0006	< 0.0005	0.0005	0.0007
Dichloromethane (≤ 0.15)	0.0048	0.0016	0.0044	0.0030
Chloroform (none)	0.0017	0.0042	0.0008	0.0023

* Concentration unit: mg/m³

■Quantity of PRTR chemicals handled, emitted and transferred (Sapporo Campus)

Chemicals	FY	Quantity handled	Emissions to the atmosphere	Quantity transferred to the sewage system	Quantity transferred off-site
Ethylene oxide	2008	1,920	1,920	0	0
	2009	1,300	1,300	0	0
Chloroform	2008	10,000	190	7.2	9,800
	2009	8,000	150	5.6	7,800
Dichloromethane	2008	4,490	190	1.8	4,300
	2009	7,200	300	2.9	6,900
Dioxins	2008	–	0.34	0	0.019
	2009	–	0.54	0	0.019

* Unit: kg (mg-TEQ for dioxins)

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Hokkaido University contributes to sustainability by addressing the challenges the human race faces as global citizens and conserving our campus for future generations.

Environmental issues around the globe represent challenges for the entire human race. If universities had taken the initiative earlier to relay the urgency of the situation facing the environment, the present might have turned out differently. In order to compensate for this delay, I believe it is the mission of universities to get involved in the creation of a sustainable society; and to this end, Hokkaido University initiated Sustainability Weeks in 2007 to communicate our message to the world.

Hokkaido University's sustainability efforts include the conservation of our campus with its diverse botanical endowments that form an integral part of our academic education. Our students utilize the natural campus environment to conduct research on plant life unique to the campus, and this environment has come to represent the identity of the university as well as the people associated with it.

This method of integrating our natural resources into our broader sustainability plan allows use to contribute toward reducing of our environmental burden, as we have shown with our carbon offset project, the "Northern Forest Project." As with this project, it is necessary to include the broader community in the project's parameters by keeping them informed of the content and progress.

Hokkaido University is proud that it has produced not only researchers pursuing cutting-edge research but also researchers that diligently collect data that supports such research. As a comprehensive university, we are composed of a variety of people studying a variety of subjects. It is imperative for these people from differing academic fields to accept one another's points of view and at the same time develop the skills to communicate outside their familiar areas of knowledge. It is for these students driven to expand their knowledge, that the university established the Center for Sustainability Science (CENSUS).

It is necessary to globalize the college educational system so that everyone in the university becomes cognizant of their responsibility as global citizens. At the same time, it is necessary that we continue to keep in mind that we can learn from our natural environment and the people in the community.

Hiroshi Saeki
President of Hokkaido University

Sapporo campus map of environmental facilities

Hokkaido University is located in the center of Sapporo (pop. 1.9 million). Our campus is widely known and popular with residents as it retains a lush greenery despite its proximity to the business district. The environment is valued as an asset inherited from our ancestors. We are therefore dedicated to conserving the campus environment while making improvements in the research facilities related to the reduction of environmental impacts. Notable facilities and spaces on campus are introduced here.

1 *Heisei* Poplar Avenue

3 Bio Toilet

5 Hokkaido University Museum

2 Poplar Avenue

4 Snow-melting system using geothermal energy

6 Relaxing Area (central lawn)

Outline of the Sapporo Campus

Land area: 1,776,248 m²
(2.3 km from north to south, 1.2 km from east to west)
Total floor area of buildings: 714,683 m²
No. of staff: 3,720
No. of students: 17,285

11 Environmental Preservation Center (Inorganic waste liquid treatment system)

9 *Sakushukotoni* River

12 Yellow star-of-Bethlehem in the Site of Old Village

7 Graduate School of Environmental Science

8 Visitor Center "Elm No Mori"

10 "Low-energy house" experimental housing

13 Biogas plant

For the Creation of a Global Sustainable Society

Hokkaido University is dedicated to the development of internationally-minded students through cooperation with various domestic and foreign universities and institutions. Our goal is to become one of the centers of excellence for the creation of a sustainable society.

Global COE program "Establishment of Center for Integrated Field Environmental Science"

Finding solutions to environmental problems requires multidimensional and practical research that takes regional and social background into account. Hokkaido University aims to establish a world base for "integrated field environmental science." This is a study on the occurrence of regional global warming based on observed field data. The use of a model of the global warming process helps us to grasp the whole picture of global warming and predict its future development. To be a Global Center of the Excellence for earth system science that deals with global warming, we are committed to educating researchers and environmental leaders who will play a crucial role in governments, companies and schools.

Practical training in our experimental forest during International Summer School

International summer school in Yakutsk (Russia)

International Antarctic Institute Project

At present, it is an urgent task to understand the dynamism of the changing polar environment in order to predict the future global environment. With the participation of 17 universities and institutes from 12 countries including Japan, the International Antarctic Institute (IAI) was started in 2006 as an international and multi-campus program for cryosphere science education. Participating universities and institutes have a common curriculum and plan to offer a program that allows students to select classes and practical trainings held at places around the world. The Graduate School of Environmental Science at Hokkaido University started the Antarctic Science Curriculum. Students who earn a certain amount of credits from the IAI curriculum will be awarded the Diploma of Antarctic Science.

Glacier field course in Switzerland

Sustainability Weeks 2009

Hokkaido University has hosted the Sustainability Weeks every year since 2007. This is an approach to promote research and education that help build a sustainable society. The Sustainability Weeks 2009 was held over a period of approximately two weeks from November 1. There were a total of 33 events when pre- and post-events were included.

We set out three principles for the Sustainability Weeks 2009. They are multidimensional approaches, the provision of concrete solutions to build a sustainable society and deepened cooperation among academic institutions. Many researchers attended thanks to the cooperation from partner universities at the forefront of global academia. The Sustainability Research Poster Contest was held for the participation of students. The purpose of the contest was to train students to be able to play an active role in the future.

Hokkaido University aims to develop the Sustainability Weeks furthermore by providing a platform for discussions open to the world as well as giving opportunities for the future generations who will lead a sustainable society to get together from around the world.

Sustainability Research Poster Contest

The SD on Campus presentation introduces activities made by a partner institution involved in the creation of a sustainable society

Hokudai Genki Project: To improve campus life through student initiatives

The Hokudai Genki Project was established in 2001. The project aims to enhance the motivation of students to learn and study. Any student of Hokkaido University is entitled to submit project proposals. We support approved projects by providing students with necessary materials. In the last nine years, 173 projects were supported. This year, a variety of 25 autonomous and creative projects, such as garbage recycling and a survey of insect and plant life on campus, were selected and are currently being implemented.

Introduction of recyclable containers to the campus during the university festival (Hokkaido University Festival Project to Reduce Environmental Burdens)

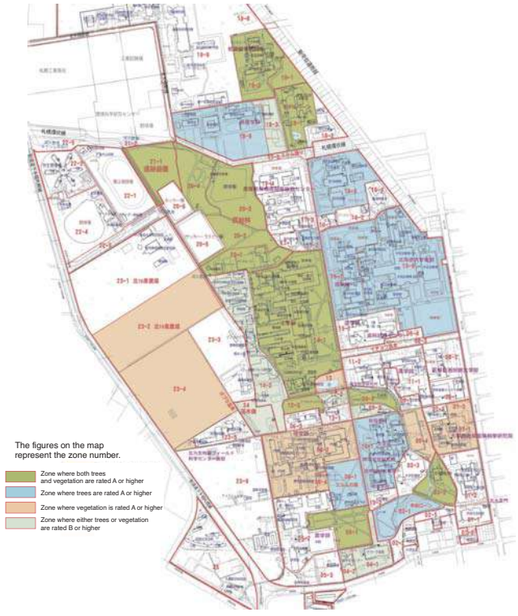
Conserving Our Campus for Future Generations

Hokkaido University engages in research and activities to develop the whole campus into a model for environmental impact reduction while making an effort to conserve the campus environment as a symbolic representation of the university.

Conservation of biodiversity

Hokkaido University is blessed with natural forests and a genuine riparian environment along the Sakushukotoni River in its vast campus. The environment plays an important role in preserving the biodiversity of Sapporo. It is necessary for us both to conserve the natural surroundings and to improve on-campus facilities.

In this context, for the purpose of preserving precious natural surroundings, we collect and manage data on species inhabiting the campus in an integrated fashion. In FY 2009, our task group surveyed insects and plants in four key areas. In FY 2010, the survey focused on amphibians and spring vegetation. We are attempting to use the obtained survey results to understand the characteristics of natural surroundings in each area and rate them. In addition, our efforts are expected to provide information on alien species and activities to eliminate them.



Tree and vegetation assessment map

Visualization of energy consumption; the promotion for energy conservation

Visualizing patterns of energy consumption encourages people to change their attitude how they use their limited resources. Hokkaido University promotes the awareness of academic staff and students regarding energy consumption by displaying energy use on campus. In FY 2009, the following efforts were made by two departments. The Faculty of Environmental Earth Science introduced new, more efficient and eco-friendly facilities. The School of Law employed a system of measuring and displaying changes in energy consumption as a consequence of energy-saving activities. Using these cases as a model, we will pursue a further reduction of environmental impacts.

Demonstration of panels displaying energy consumption

Northern Forest Project

By implementing periodic thinning of an overcrowded forest, it will encourage to grow trees more efficiently. According to the Kyoto Protocol, carbon sinks can be increased by forest improvement. From this perspective, the Forest Research Station of the Field Science Center for Northern Biosphere implements a carbon offset program in our experimental forests. We set a goal for this program to absorb carbon dioxide generated during the period of the Sustainability Weeks through the proper management of the experimental forests for the next five years.

In FY 2009, additional thinning was carried out to absorb approximately 1,110 tons of carbon dioxide in the Teshio, Nakagawa and Uryu experimental forests. Furthermore, the forests were monitored, for example, by means of a survey of tree accumulation in areas where periodical thinning was conducted in the previous year. If the survey results indicate insufficient carbon dioxide absorption, additional measures will be taken.

Forest after improvement cutting to secure space for trees to grow

Improvement cutting
Outdoor work in midwinter (may be conducted in cold weather at -20°C or lower)

Survey of growing stock of forest after improvement cutting

Other major activities

【Global level】

Project to build a sustainable low-carbon society
By inviting participation from a wide range of people, including those from outside the university, human resources are fostered for the creation of a sustainable low-carbon society.

【Regional level】

Open lectures
The results of educational and research activities are open to the community to educate citizens on environmental issues.

【Campus level】

Energy efficiency design for campus buildings
To reduce environmental burdens, energy-saving measures are introduced when constructing, remodeling and repairing campus buildings.

Program to control vehicles allowed on campus
Since January 5, 2009, visitor vehicles entering the campus must pay an entrance fee in an attempt to reduce the number of vehicles on campus.

Hokkaido University Hospital ESCO Project
The ESCO project has been introduced to reduce environmental load and utility costs through energy-saving solutions.