Environmental Goals and Achievement

Nagoya University has been engaged in environmental activities toward the university-wide goals. The results for FY2014 were as follows: Successfully completed A Not completed

		- 5 1			
Catagony	Cool	FY2014			
Category	Guai	Achievement	Self-evaluation		
Energy saving	Reduce the annual unit energy consumption (Energy consumption per building floor area) by 1% from the previous year. (total of 46 districts including Higashiyama, Tsurumai and Daiko campuses)	Reduced by 2.2%	•		
Reduction of greenhouse gas emission	Reduce the CO ₂ emissions at Higashiyama, Tsurumai and Daiko campuses in FY2014 by more than 20% in comparison with FY2005. (NU Campus Master Plan 2010)	Reduced by 22.4% (Emissions in FY2014)	•		
Improvement of environment and safety education	Conduct seminars on annual self-inspection of local exhaust ventilation.	Conducted as planned	•		
	Establish university-wide guidelines on safety educations and develop standard education materials.	 Draft guidelines under review Standard education materials under preparation 			

We achieved the goal for energy-saving, having reduced the unit consumption by 2.2% from the previous year. It resulted from introduction of higher-efficiency equipment and daily efforts during the summer.

The CO₂ emission reduction goal of the NU Campus Master Plan 2010 (see the Topics) was also successfully completed. Seminars on the annual self-inspection of local exhaust ventilation were conducted as planned.

We prepared draft university-wide guidelines on safety education and worked on preparation of the standard

education materials based on those guidelines. However, we did not complete them by the end of FY2014 and carried over this goal to FY2015. With the university becoming internationalized, we are going to increasingly focus on safety educations including ones for students from overseas.

*URL for the NU Campus Master Plan 2010. http://web-honbu.jimu.nagoya-u.ac.jp/fmd/8campusmasterplan /campusmaster.html.

Material Balance¹ of University Activities

The table below shows the environmental burdens resulting from our activities (education, research and medical activities) in FY2013 and FY2014; J: Decrease, 1 : Increase.

Elect (10,000	tricity 0 kWh) 2% ♣	Fuel (1,00 6.1	gas 0 m³) % ↓	City v (1,00 9.5	water 10 m³) 5% 🕹	Well (1,00 1.5	water 00 m ³) 5% 1	Paper (t) 0.8% ↑		Chemicals (t) 6.5% ↑	
2013	2014	2013	2014	2013	2014	2013	2014	2013	2014	2013	2014
12,900	12,870	4,255	3,996	275	249	599	608	260	262	138	147



CO₂ emission ^{*2} (t-CO₂) 1.5% ↓		Waste (1,00 2.	water ^{*3} 0 m ³) 1% <mark>↓</mark>	Municipal solid waste (t) 19.4%		Industrial waste *4 (t) 14.1% ↑		Specially controlled industrial waste (t) 5.8%	
2013	2014	2013	2014	2013	2014	2013	2014	2013	2014
76,439	75,303	875	857	2,833	3,384	1,137	1,297	588	622

*1: A material balance shows quantities of resource and energy input for the university activities and quantities of environmental burdens. *2: The CO2 emissions are calculated according to the Act on Promotion of Global Warming Countermeasures. CO2 conversion factor for electricity: (FY2014) 0.513t-CO2/1,000 kWh

(FY2013) 0.516t-CO2/1,000 kWh

*3: Total usage of city and well water.

*4: Excludes specially controlled industrial waste



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outstanding results compared to FY2013.

The NU MIRAI 2020 (Nagoya University Matsuo Initiatives for Reform, Autonomy and President of Nagoya University Innovation 2020), recently established based on those numerous accomplishments, shows 松尾清一 our new challenges and goals for the next six years. According to NU MIRAI 2020, we strive to develop social innovations through various forms of cooperation including industry, academia and government as a core university located in one of the biggest industry areas in the world. We also aim to build a model of cooperation among industry, academia, government and people, and serve as a driver to strengthen the vitality of the region, in order to develop a safer, securer and more sustainable society mainly by our Disaster Mitigation Research Center. We are also drawing up NU Campus Master Plan 2016, a grand design for creatively revitalizing the university, and NU Facility Management Plan for the next fifty years.

By these plans, Nagoya University will be able to continuously develop and be one of the world's leading universities that can contribute to a human society.

Environmental Policy

The fundamental principles of scholarly activity for Nagoya University are set down in the Nagoya University Academic Charter. Within the Charter, it is written that "Based on the academic traditions of freedom and generosity, our mission is to contribute to the happiness and well-being of human beings, through research and education related to humanity, society and nature". The development of civilization and the current activities of human beings will have a great influence on future generations. Therefore, based on our Charter, and in order to fulfill our role in society and to contribute to the harmonious development of humanity and nature through research and education rich in imaginative power, we hereby establish the following fundamental principle and policies of Nagoya University regarding the environment.

Fundamental Principle

Recognizing that human beings have created a vast diversity of cultures and values, we will, for the benefit of future generations, consider which aspects should be truly respected, and contribute to the realization of a society that can maintain such traditions and values.

Basic Policies

Basic Position

(1) In order to investigate the causes of environmental problems, and find suitable means for dealing with them, all academic fields will develop educational and research programs that aim for sustainable development.

Environmental Management

(2) In order to plan further improvements in environmental management, we will (together with related parties) consider what attitudes and actions are necessary for universities, put them into practice, and further pursue them.

Environmental Performance

enable us to take preventive measures.

Social Responsibility and Environmental Communication

(4) With respect to laws and ethics, we will work to enhance trust from local and international communities, by making information available publicly, and through communication and mutual understanding with related parties.

Message from the President

Nagoya University has tackled many challenges and achieved innovative success. The blue LED invented by Distinguished Professor Isamu Akasaki and Professor Hiroshi Amano is expected to be widely applied in energy-saving areas as a core technology to create a sustainable society. Nagoya University also achieved the goal for reducing CO2 emissions in FY2013. In FY2014, the final year of the plan, we successfully completed the goal with

(3) Recognizing (together with related parties) that our own activities involve environmental effects and responsibilities, we will work to find comprehensive and systematic solutions that will reduce our environmental impact, and

> (Approved by the President on August 1, 2005) (Revised on October 12, 2010)

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Environmental education and studies

Blue light-emitting diodes invention by **Distinguished Professor Isamu Akasaki and** Professor Hiroshi Amano.

The 2014 Novel prize in physics was awarded to three scientists "for the invention of efficient blue light-emitting diodes, which has enabled bright and energy-saving white light sources". Two of the scientists are Distinguished Professor Isamu Akasaki of Nagoya University and Professor Hiroshi Amano of the Graduated School of Engineering of Nagoya University. Professors Akasaki and Amano succeeded, for the first time in the world, in developing a high-brightness blue LED, which had been considered unrealizable during the 21st century.

The Novel committee said, "Their inventions were revolutionary. Incandescent light bulbs lit the 20th century; the 21st century will be lit by LED lamps." and "The LED lamp holds great promise for increasing the quality of life for over 1.5 billion people around the world who lack access to electricity grids." LED is becoming an essential for our life.



Distinguished Professor Isamu Akasaki (right) Professor Hiroshi Amano (left)

Multidisciplinary Research for Supplying Safe Drinking Water to Asian Regions

Our research laboratory has been working on the improvement of drinking water quality in Asia more than ten years. We have recently developed a facility enabling measurements of trace elements such as arsenic at a level of 0.1µg/L. We have also started a joint research with Asian researchers in the study of medical public administration. It is considered to take ages until people living in rural areas of developing countries come to have waterworks.

We would like to do our best to develop a technology to purify the well water for drinking, which would be cheap, safe and easy, and to deliver the technology fast as we can to people who need it.



Professor, School of Medicine

Environmental performance

Achievement of CO₂ emission reduction target!

Nagoya University set a CO₂ emission reduction target in the "Campus Master Plan 2010" (more than 20% CO₂ emission reduction by Higashivama. Tsurumai and Daiko campuses in FY2014 in comparison of FY2005^{*1}). It was achieved in FY2014, the final year of the plan, a reduction of 22.4% from FY2005 by ESCO project ^{*2} for Nagoya University Hospital and installing higher-efficiency equipment, etc. Since many instruments need to be operated continuously for 24 hours such as laboratory equipment, reduction of the base electricity consumption ^{*3} is under consideration as the next target.



ESD (Education for Sustainable Development)

In Nov. 2014, UNESCO World Conference on ESD was

Education for Sustainable Development was hosted in

Nagoya University on the previous day. At the opening

Nagoya University established satellite campuses in Asia,

and introduced a doctoral (latter period) course program,

which can play an important role in nation-building in Asia

The Nagoya Declaration on Higher Education for Sustainable

conference, was reflected in the UNESCO World Conference

that was kicked off the following day. Nagoya University has

promoted and supported many other ESD initiatives as well,

including "Nagoya University Five Graduate Schools ESD

*ESD (Education for Sustainable Development) is an endeavor aimed

at cultivating people who think about the problems facing the modern

society such as those concerning the environment, poverty, human rights, peace and development as their individual problems and

tackle them in their communities toward the creation of new values

and movements that will lead to the solution of those problems and

then eventually toward the creation of a sustainable society.

Development, which was adopted at the closure of the

speech the ex-President Hamaguchi announced that

held in Nagoya, Aichi. International Conference on Higher

in Nagoya University

for nurturing people.

Program."

*1: Excludes increased CO₂ emissions due to construction of facilities and introduction of large-size laboratory equipment projected after FY2006.
*2: A business for covering the expenses for energy-saving renovations with the reduced light and fuel expenses
*3: Hourly consumption of electricity at the time of a day when it is the lowest.

Social responsibility and environmental communication

Seminar on Safety Education in Asian Advanced Universities

The Seminar on Safety Education in Asian Advanced Universities was held at Nagoya University discussing various issues concerning safety educations and sharing information. The results of the seminar can be incorporated in the planning of safety educations to students and academic staff of Nagoya University. It is one of keys in the globalization plan of the university aiming to become a hub university in Asia. The seminor will be also useful in promotion of inter-university collaborations.



Eco Campus Project 2014



The "Eco Campus Project 2014" is led by students of the School of Environmental Studies in NU. In "NU Reuse Station Project", one of its subprojects, the students set

up a re-use station on campus, collecting and delivering reuse goods once a month from Jan. to Mar. in 2015. In this project, 131 items including books, clothes and tableware were collected, and 79 items were reused. This project contributed to reduce 48kg of wastes and 304kg of CO2 emission.

No waste has been produced, because the remaining items were re-cycled off campus. Not only students but also academic and administrative staff and foreign students took part in this project.



ITbM Building Realization of "Mix Lab", which aims for a genuine fusion of biology and chemistry

The Institute of Transformative Bio-Molecules (ITbM) started its research in the new laboratory in March 2015. The new ITbM Building, constructed based on the concept and functions of "Mix Lab", is designed to encourage communication, integrate disciplines and create innovative ideas. About 40% of researchers in ITbM are foreigners and many foreign researchers visit the Institute frequently. Training programs on the environment, safety and disaster prevention are provided in both English and Japanese for newcomers. Rules governing research activities quite differ depending on the country.

By providing foreign researchers with detail information in English about rules in Japan, it is supposed to successfully prevent accidents / incidents from misunderstanding.



Designated Lecturer / Secretary for Research Promotion, ITbM

Graduate's career : from studying to teaching

Thirteen years have passed since I graduated from the School of Environmental Studies in 2002 and nine years have passed since I took the current position. My study theme is "Technologies contributing to energy-saving in urban areas and buildings as well as to global warming prevention." When I was a student in NU, I had a dream that I become a researcher for developing technologies which enrich life of people around the world regardless of social circumstances. I believe that scientific knowledges exist for making our life richer and we finally obtain "fruits" by accumulating a daily small progress which drives us to a higher level of researches. I am deeply grateful to be in the current position, that allows me to come in contact with many students who are making a progress in this way.





Mika Yoshinaga Dept. of Architecture, Faculty of Science and Technology