Think Globally, Act Locally

Kyoto University

Graduate School of Global Environmental Studies

京都大学大学院 地球環境学堂・地球環境学舎・三才学林

GUIDEBOOK 2015

ガイドブック 2015

The Graduate School of Global Environmental Studies (GSGES) was established in April 2002 to address the urgent environmental problems of the 21st century. Our primary objective is to help establish global environmental sustainability as a new field of academic study, bringing together ethics, science and technology, and humanities and social sciences. Through our educational and research programs, we seek to foster a new generation of professional practitioners.

Helping us realize this goal is a multidisciplinary and international faculty from fields that include engineering, agriculture, law, economics and literature. The graduate school seeks to 1) achieve in-depth discussion and collaboration among faculty members, 2) train high-level researchers and practitioners who can find comprehensive solutions to environmental problems, and 3) support education and research through a variety of innovative frameworks and programs.

Our ground-breaking research initiatives include multidisciplinary projects working with various local governments in Japan as well as extended international academic collaboration with universities and researchers in such countries as Vietnam, China, Thailand, Malaysia, Fiji, Germany and Sweden.

Our educational program trains outstanding professionals and leaders in environmental management. Core lectures are conducted in English and all students in the master's program are required to participate in one week of fieldwork, held in the summer, as well as a three-month internship program.

The 442 master's program graduates and 134 doctoral program graduates who are actively working in society today represent the results of our efforts to date. We are proud to have educated a large number of talented students who are now playing an active role in universities, research institutions, government offices, private enterprises and NPOs throughout Japan and overseas. GSGES welcomes inquisitive, hard-working and global-minded individuals ready to take part in leading the way to a sustainable future.

Dean, Graduate School of Global Environmental Studies

Shigeo FUJII

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Introduction

Overview and Objectives

Objectives and features of the Graduate School of Global Environmental Studies

Many serious global environmental problems are posing challenges for humanity in the 21st century. Abundance and convenience are desired by those people living in developed countries but mass production, mass consumption and mass waste have resulted in climate change, ozone layer depletion, water pollution, ground water and soil contamination, and waste-related problems. Since developing countries with rapid population growth are following the same path as developed countries, this will impose new stresses on the planet. The exploitative systems of primary industries such as agriculture, fisheries and mining undermine the growth of developing countries that primarily depend on these industries, and the least-developed countries still must eradicate poverty in order to provide a basic standard of living for their people. Yet there has also been progress, with some countries seeking to achieve sustainable and equitable development in line with the development goals conceived by the United Nations, and many OECD countries, including Japan, now strongly supporting conservation and the recycling of resources.

Global environmental problems include many complex issues on every scale, from global to local. We must tackle these problems in two ways — first, by applying research and academic skills in order to gain a greater understanding of the problems involved, and second, by seeking to solve these problems. The first approach requires the training of highly skilled researchers who can apply scientific principles and an appreciation of complexity to the study of global environmental studies. The second requires the training of high-level practitioners who can address problems by implementing sustainable and practical approaches.

Fostering top-notch researchers and practitioners requires innovative educational and research programs focusing on the global environment and drawing on a wide range of disciplines. By incorporating teaching derived from many disciplines in the natural and social sciences, the evolving and innovative field of global environmental studies can offer academic study combined with practical experience in various domestic and overseas organizations.

The Graduate School of Global Environmental Studies is organized flexibly so as to meet the varied needs of both research and education. Some of its unique organizational features are shown on the following pages.

Educational, research and support organizations

Global environmental studies are at an early stage of formation. Research activity needs dynamic development with strategic views combining foresight and flexible interdisciplinary integration. Educational programs require sound, systematic teaching of a broad spectrum of global environmental topics with a view to social relevance and profundity. Research and educational activities, therefore, require different conditions. In order to meet these conditions, the Graduate School includes a research body, the Hall of Global Environmental Research, and an educational body, the School of Global Environmental Studies. Further, a supporting organization for education and research, the Grove of Universal Learning, provides wider perspectives to both researchers and students with different disciplinary backgrounds so that they can develop their research and talents cooperatively.

Collaboration with other graduate schools, institutes and research centers of Kyoto University and other organizations

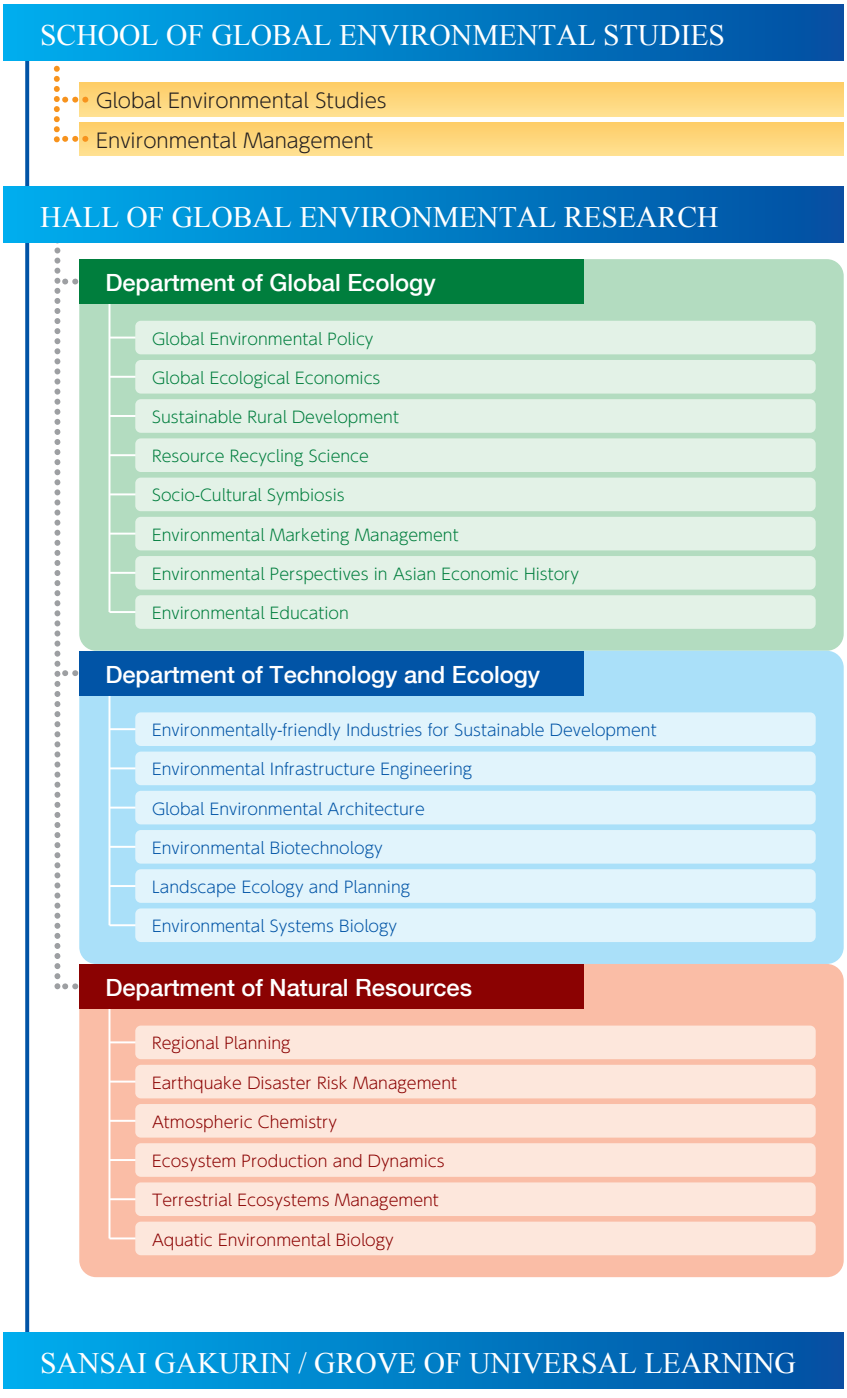
The Graduate School of Global Environmental Studies collaborates with many other graduate schools, institutes and research centers of Kyoto University to conduct interdisciplinary study and education that link other academic fields with global environmental studies. In order to facilitate such support, the Graduate School has invited professors from other faculties of the university as collaborating professors. They not only teach and conduct research at their home institutions, but also, at the request of students of the Graduate School, they provide lectures and guide research and thesis-writing for master's and doctoral degrees. The Graduate School also invites visiting professors and lecturers from institutions within Japan and abroad to speak on current topics. The educational programs emphasize formal instruction as well as collaboration with domestic and international NPOs and NGOs to give students opportunities for internship study and field experience in various sectors.

Carrying out university-wide research projects

In order to open up new areas of research in global environmental studies that are substantially different from those of the traditional sciences, it is necessary for professors of the Graduate School to promote university-wide research projects with the intensive collaboration of researchers from different areas. The Graduate School promotes and actively participates in these research projects.

Hall of Global Environmental Research (Research Body)

This organization includes three types of faculty: permanent professors, professors on double appointments, and collaborating professors. Double-appointment professors teach and conduct research both at their home schools, institutes or the various research centers of Kyoto University, and at the Graduate School. They hold professorships at two institutions within Kyoto University for a limited term. Collaborating professors are professors who teach and conduct their research not only at the institution within Kyoto University to which they have been appointed, but also at the Graduate School. These three types of faculty, together with visiting professors, explore global environmental issues and develop advanced technologies related to global environmental problems. Predicated on the desire to achieve global benefits, ecological conservation and recycling of natural resources, the Hall of Global Environmental Research is composed of three research groups, the departments of Global Ecology, Technology and Ecology, and Natural Resources.



Department of Global Ecology

In the global society of the 21st century, human socio-economic activities and the natural environment are increasingly interdependent, and international relationships to support the advancement of science and technology, economic development and environmental preservation are strengthening.

With these trends in mind, the Department of Global Ecology seeks to promote scientific contributions by (1) studying the framework of human and environmental symbiosis, (2) integrating existing natural and social science disciplines into the new discipline of global ecology, (3) developing policies and techniques aimed at serving common global interests that transcend national and international economic interests, and (4) conducting studies which can contribute to governance that can enlarge management capabilities for the global environment.

Global Environmental Policy／Global Ecological Economics／Sustainable Rural Development／
Resource Recycling Science／Socio-Cultural Symbiosis／
Environmental Marketing Management／Environmental Perspectives in Asian Economic History／
Environmental Education

Global Environmental Policy

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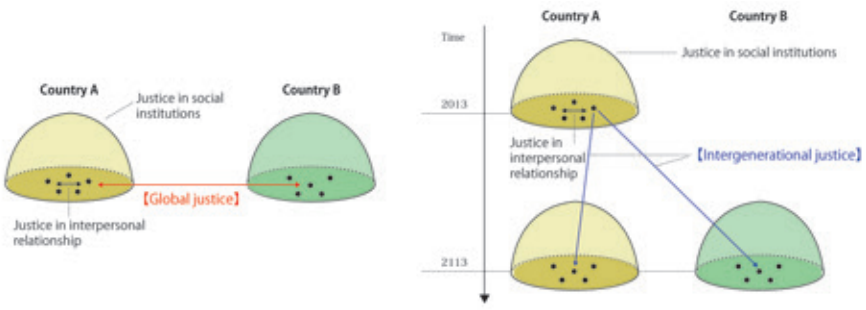
In the laboratory of Global Environmental Policy, we explore normative and positive questions concerning environmental problems and policies on local, national, regional, and global scales. On one hand, foundational topics are studied from the perspectives of legal and political philosophy. One group of these topics concerns the issue of global justice, asking, for instance, what principle should be adopted in distributing the benefits and burdens of climate change policy among individuals or states across the world. Another group has to do with intergenerational justice, which relates to the question of what are grounds for the obligation that the present generation might bear to future people. On the other hand, we also conduct empirical and normative research on environmental policy integration, policy transfer, environmental law, and governance for sustainability by using concepts, theories, and methods developed in policy analysis and political science.



Global and intergenerational justice

Global Ecological Economics

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When considering which measures to employ in order to counter traditional challenges such as poverty and economic depression, we need to take into account global environmental issues and the limits of global resources. This means that it is very important to clarify who should be responsible for promoting the development process and what kind of rule should be applied to this process in order to enhance the quality of life needed for human society.

When providing directions for sustainable development, we need to address several key questions, including:

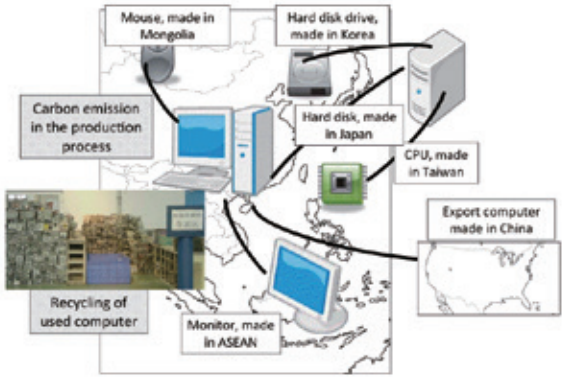
- What is a sustainable society?
- If there is such a society, how can it be realized?
- What kind of quality of life and what kind of lifestyle can we expect when such a society is realized?
- What can the world economic system do to conserve the global environment and attain both intergenerational equity and North-South equity?

In order to answer these questions, our field of Global Ecological Economics pursues two basic research goals:

(1) To clarify underlying economic, social and institutional factors that cause degradation of the environment and adversely affect the quality of life—locally, nationally, regionally and globally.
(2) To determine what kind of policy instruments, policy integration, financial and institutional arrangements are required in order to transform economic and industrial structures so that they can advance sustainable development in the long term.

Currently, the academic staff pursue specific research concerns focusing on such topics as:

- Political economy of sustainable development
- Economic development and environmental policy and governance in Asia
- Globalization, climate change and global environmental policy
- Environmental aid and the harmonization/diffusion of environmental policy and technology
- Regional environmental and economic policies in East Asia
- Energy, environment and climate policy integration
- Environmental fiscal reform, carbon energy tax reform
- Financial mechanisms for the global environment (CDM, PES, REDD, Green Climate Fund, etc.)



Deepening economic and environmental inter-dependence, regional division of labor and resources in East Asia

Sustainable Rural Development

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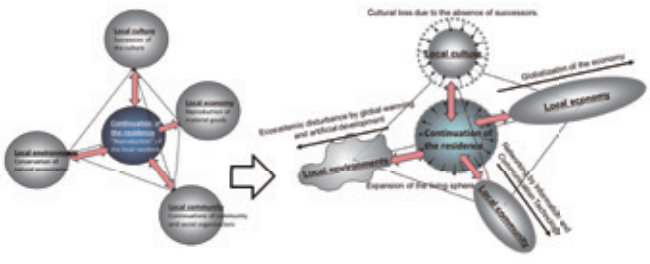
Rural sustainability (RS) was traditionally maintained by preserving harmony within a geographically limited frame. This type of harmony was maintained by five components, as shown in the figure on the right. Because all of these components are associated with regional characteristics, rural sustainability also involves characteristics that are unique to each region.

In recent years, however, the declining and aging population, economic globalization, climate change and excessive human-induced development have brought about changes in those five components. As a result, rural regions are now facing various challenges and this, in turn, is significantly impairing rural sustainability.

Working from a rural planning perspective, the Laboratory of Sustainable Rural Development is designing and evaluating measures and policies in an attempt to offer solutions to these challenges and to rebuild region-specific rural sustainability that can extend into the future. Our research concerns cover a wide range of topics including regional resource management by way of knowledge management, restoration of social capital (SC) and regional revitalization, symbiosis between residential environments and wildlife, regional development through regional informatization, the establishment of resident-led community planning theory, and proposals on how to carry out regional realignment and social infrastructure development in a society with a declining population.



Components of Rural Sustainability and their Changes.

Resource Recycling Science

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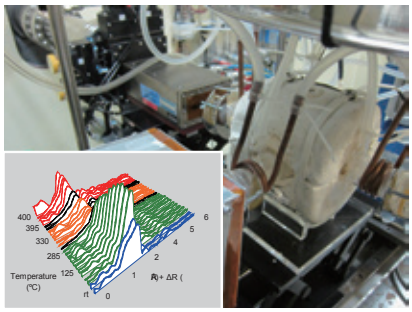
To establish a sound material-cycle society, our laboratory aims to develop procedures to analyze, manage, design and control treatment and disposal systems for solid wastes, including recycling and resource recovery, by applying techniques based on the disciplines of environmental systems engineering and environmental chemical engineering. By performing fundamental and applied experiments on both a laboratory scale and on a field scale and using computer analysis and simulation, we are addressing the following subjects:

1) Development of technology for optimum waste treatment, recycling and energy recovery.
2) Control of hazardous trace substances.
3) Evaluation and optimization of waste treatment and management systems.

Our laboratory is also part of the Department of Environmental Engineering, Graduate School of Engineering, Kyoto University, and is located at Katsura Campus, where students in the Graduate School of Engineering are working together with lecturer Dr.Tadao Mizuno and technical staff member Kenji Shiota.

Landfill site of municipal solid waste in Shenzhen, China



In-situ XAFS analysis of elements in municipal solid waste ash (at SPring-8, a large synchrotron radiation facility, Hyogo, Japan)

Socio-Cultural Symbiosis

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This laboratory will help students to gain an understanding of environmental problems and their causes and examine public policies designed to solve these problems from the viewpoints of political science and cultural anthropology.

Humankind has hitherto been able to flexibly adapt to an ever-changing environment. However, a dramatic increase in both the productivity and consumption of human societies since the beginning of the modern era has imposed a tremendous load on the environment and resulted in disasters that humans lack the capacity to deal with. For example, as global capitalism expands and effective ways to protect the environment are being sought, what kind of changes have hunter and gatherers and commercial nomads, who have led their nomadic life while utilizing natural and human resources, been exposed to, and what risks have they faced? In order to consider complex environmental problems, we examine how various communities have adapted to environmental changes and have maintained their lifestyles over time from a cultural anthropology perspective.

Regarding environmental problems in developed countries, political as well as economic factors play a crucial role. Environmental policies are formulated based not only on differences in public attitudes to environmental issues but also on a range of political factors such as whether or not a country has environmentally-conscious political parties, how active environmental movements are, the degree of political influence agricultural lobby groups have, and the ranking of environmental ministries and agencies. We examine the political background of environmental problems from a political science perspective and environmental policies from the viewpoint of policy studies.

Camping Site of a Nomadic Community called Kalbeliya (Rajasthan, India, Sep. 2011)

Environmental Marketing Management

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To achieve a more sustainable society beyond "negative externality" problems, all members of society must internalize the value of harmonizing with the environment. Can enterprises cover the costs with the returns from their pro-environmental activities? Is there a high probability that they can gain the support of consumers? Our current themes are as follows:

- Corporate market strategy based on pro-environmental activities: differentiation strategy, defensive strategy, and brand strategy beyond CSR
- Environmental communication between corporation and consumer: environmental labels, environment management system certification, and environmental risk communication
- Consumers' perceptions and behavior in relation to environmental issues: consumer segmentation, analysis of consumer behavior
- Pro-environmental agriculture: activities and management, market analysis, and consumer behavior
- Food risk communication: theories, analysis of consumers' risk perception and risk-averse behavior, and evaluation of food safety policies

Pro-environmental agricultural practices: the fish cradle project in Shiga prefecture, Japan

A model of consumer behavior in selecting pro-environmental products

Environmental Perspectives in Asian Economic History

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The primary focus of this area of study is historical developments in Asia. The nineteenth century is now widely understood to have been the first great age of modern globalization, introducing the conjoined concepts of the 'free trade revolution,' the 'transportation revolution,' and the 'international financial revolution' of the mid-century years. More recently, comparisons among regional economies have been suggested as a method for studying global history. Rather than concentrating on intra-European comparisons, this approach to global history focuses on comparisons between major regions such as Western Europe and East Asia. It analyzes the process of globalization in terms of the interactions between different regions, rather than the unilateral influence of the West. East Asia stands out as one of the regions least affected by Western colonialism, and provides the best example of industrialization in the nineteenth century.

The nineteenth century was also an era characterized by globalized economic crises, most of which have been examined surprisingly little in terms of their international dimensions. Epidemic outbreaks, in particular, became common throughout the world during the nineteenth century. People carried various endemic diseases from port to port along seaborne trade routes and such diseases spread easily in the rapidly expanding cities, where the development of sanitation facilities had not kept up with the increase in population. This process certainly disrupted trade and could be considered a contributing factor to the economic depressions that followed. The process of industrialization in East Asia must be considered in terms of these globalized economic crises.

Altogether, these geophysical, biological and ecological factors may have been closely connected with economic movements, but it is not clear how and to what extent these factors may have operated. These significant questions must be addressed at the under-explored boundaries between history and scientific disciplines that historians often ignore.

The world's major shipping routes

Environmental Education

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Our research field is built on three pillars: (1) education for sustainability (2) disaster risk reduction and (3) community resilience studies. We aim to reduce the gap between knowledge and practice through pro-active, field-level, community-based education, research and project implementation.

Education for sustainability empowers individuals and communities to create a more sustainable future. Our activities include development of a comprehensive approach for tertiary-level sustainability education as well as efforts to promote campus sustainability. Disaster risk reduction approaches focus mainly on vulnerable communities in Asia with emphasis on urban risk, climate change adaptation, ecosystem-based risk reduction, and disaster education. Finally, community resilience studies focus on migration and displacement induced by development, disasters and climate change, with special emphasis on dynamics of social networks and the role of institutional and technological innovations in enhancing well-being while preserving a community's natural resource base.

Overall, we seek to learn from field experience and project management. Working closely with national and local governments, non-government organizations, United Nations, bilateral and multilateral development agencies and regional bodies, faculty and students develop unique process-oriented community-based approaches for education, disaster management and environmental sustainability.

Experiential learning of students

Mr Satish Kumar in discussion with students

Focus group discussion with communities

Department of Technology and Ecology

A delicate balance between nature and humanity has emerged as part of the global system through the interaction between nature and human culture. Human culture, as well as human life, cannot be maintained without sustaining such a balance. In order to position global environmental studies as a fundamental science relating to the topic of human existence, we try to integrate environmentally friendly technologies across disciplines and develop technologies and technological criteria appropriate for an environmentally balanced civilization.

Environmentally-friendly Industries for Sustainable Development／Environmental Infrastructure Engineering／
Global Environmental Architecture／Environmental Biotechnology／Landscape Ecology and Planning／
Environmental Systems Biology

Environmentally-friendly Industries for Sustainable Development

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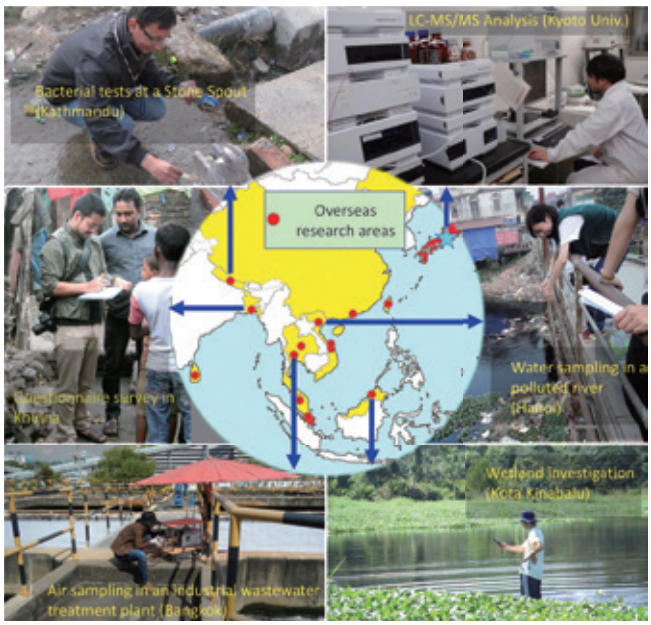
Japan overcame severe problems with environmental pollution in the 1960s and 70s and became one of the world's most environmentally advanced countries. During this process, Japan accumulated vast amounts of knowledge, skills and experience in the practical solution of environmental problems. This includes environmental technologies, legal systems and environmental policies. On the other hand, most developing countries in Asia are still suffering from serious environmental problems and our experience has not yet been fully utilized by these countries. This is mainly due to the lack of international education systems suitable for transferring environmental technologies and the lack of practical training in solving real environmental problems in Japan. Industries should be environmentally friendly in order to achieve the sustainable development of a global civilization. Such industries should promote resource recycling and energy saving, and avoid the use of hazardous substances.

By means of the various research projects carried out in this laboratory, we foster environmental leaders who will have the ability to solve environmental problems anywhere in the world. Conservation and management of aquatic environments, the promotion of resource recycling, the development of energy-saving industries, and the improvement of environmental sanitation in developing countries are all topics being studied using many kinds of tools, such as water quality analysis, micro-pollutant analysis, water and micro-pollutant treatment technologies, and land use data analyses based on satellite images.



Examples of surveys and experiments

Environmental Infrastructure Engineering

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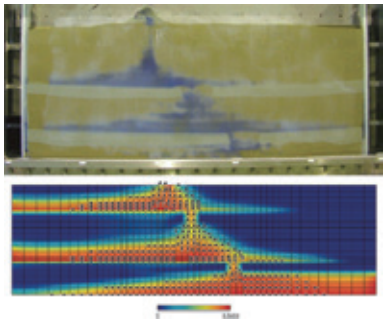
This area of study focuses on infrastructure development and management from the viewpoint of environmental social systems. The goal of our studies is to preserve and restore the hydrological environment and geo-environment, which are essential for any form of infrastructure development.

To accelerate the creation of a recycling-based society, we particularly focus on 1) engineering developments for the appropriate reuse or disposal of waste materials, including those generated by natural disasters, 2) the total design and management of landfill sites used for waste disposal, with particular interest in verifying the performance of liners and covers installed in waste containment facilities, and 3) the development of remediation techniques for contaminated soils and groundwater, and the evaluation of their effectiveness.

In addition, we seek to develop concepts and technologies for the creation of sound future infrastructure, in light of the changes occurring in the population and in the climate, as an alternative to the typical form of infrastructure that has the sole aim of supporting economic development.



Model test on infiltration of non-aqueous phase liquids in subsurface

Panorama of a waste landfill site

Global Environmental Architecture

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Global Environmental Architecture focuses on various aspects of the human environment, including people, lifestyles, shelter and communities. Learning about sustainable environments from local culture and natural settings, our aim is to establish new frameworks which will make a significant contribution to current global environmental and disaster management issues.

Design for a safe human environment rooted in local culture and contexts

This research explores the development of a "safe human living environment" by gaining a better understanding of natural disasters, human behavior and their relationships with lifestyles. Based on the experience gained from past disasters, knowledge about regional disaster prevention and the latest technologies, measures, plans and design concepts are proposed and implemented in the form of practical applications for the creation of disaster-resilient buildings and societies.

Design for a harmonious human environment and its contexts

This research explores the development of a "harmonious human environment" based on local culture and natural settings. Learning from sustainable urban and rural settings, the aim is to gain a better understanding of the global environmental order in all forms. The findings obtained and the experiences studied are then realized through planning and design, and implemented in the form of practical applications for local societies.

Shake table demonstration of building models (retrofitted and non-retrofitted) in Afghanistan

Reconstruction project of Fijian traditional wooden house "Bure"

Environmental Biotechnology

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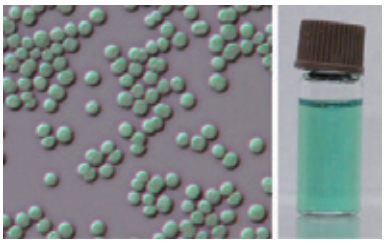
Photosynthesis is the most important process responsible for supplying huge amounts of chemical energy for the Earth's ecosystem. Photosynthetic algae and phototrophic bacteria in aquatic environments, as well as land plants in terrestrial environments, all play a key role as primary producers in their respective ecosystems.

We are interested in the biodiversity of phototrophic microorganisms and their photosynthetic mechanisms, especially in the cyanobacteria and microalgae that are the key phototrophs for forming and preserving aquatic ecosystems. Targeting those organisms, we work on a broad range of studies focusing on their ecological distribution, biodiversity, genome, molecular mechanisms used for photosynthesis, evolution, genetic engineering and related topics. Based on these studies, we also aim to develop environmentally friendly technologies which can make use of these phototrophs for the production of low-impact materials.

Phytoplankton research at Lake Biwa



Cyanobacteria (left)
Chlorophyll that absorbs light energy (right)

Landscape Ecology and Planning

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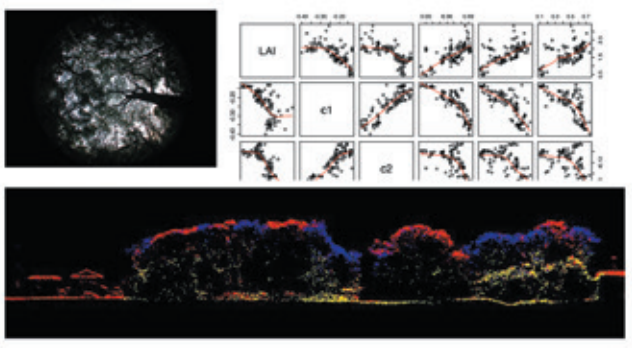
The goals of our laboratory can be summarized as:

1) Protecting natural areas, including endangered wildlife habitats.
2) Restoring degraded natural habitats.
3) Planning and managing sustainable landscapes.

The scope of our research covers a variety of areas, ranging from small gardens and urban parks to rural and mountain areas, and also includes regions undergoing desertification. We deal with the landscape ecology of both heavily populated areas as well as relatively unpopulated natural areas in order to propose better solutions to land use conflicts between man and nature.

Recognizing that we cannot stand apart from nature, and that ecological sustainability may not be achieved without corresponding cultural sustainability, our current areas of concern include landscape planning, design and management that takes wildlife habitats into consideration, and the development of suitable methods for ecological mitigation carried out as part of the environmental assessment process.

Cultural landscape: an important aspect of landscape planning



Ecological monitoring by remote sensing

Environmental Systems Biology

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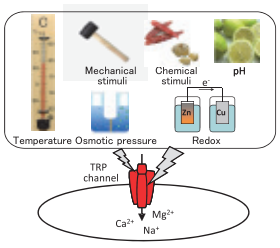
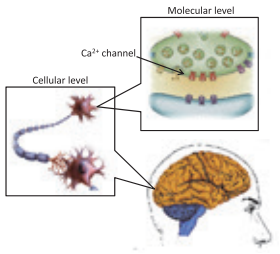
In order to establish a sound physiological basis for studying how living organisms, including human beings, are capable of surviving in an ever-changing environment, it is crucial to understand the intrinsic molecular systems responsible for sensing and adapting to changes in environmental parameters. We take a multidisciplinary and integrative approach to this topic, employing biochemical, molecular genetic and neurobiological techniques. Our specific aims are:

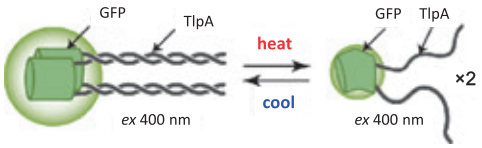
1) To study a group of ion channels called TRP that function as biosensors for changes in environmental parameters such as atmospheric oxygen and temperature, and the mechanism of adaptation through them.
2) To study the calcium channels which control neurotransmission between neurons in the brain, the control center of our behavioral responses to environmental stimuli.
3) To develop molecular probe techniques able to detect in vivo responses to chemical and physical stimuli.

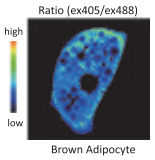


TRP ion channels as biosensors of changes in environmental parameters



Calcium channels control neurotransmission between neurons in the brain.





The heat production in brown adipocytes visualized by the thermosensor

Department of Natural Resources

The Department of Natural Resources considers the global ecosystem to be a complex composed of nature and human society and seeks to avoid environmental destruction by conducting dynamic analyses of resource circulation on both a global scale and within regional ecosystems. Our research and educational approaches are, therefore, built on both global and regional perspectives, based on the idea that natural resource management must conform with a well-designed human lifestyle on a local scale that, in turn, contributes to the conservation of the larger ecosystem and ultimately that of the global environment. Topics that receive particular attention include the environment-friendly utilization of organic resources, technologies for low-impact material conversion and recycling, and the proper management of land and water resources. Field-based studies of geospheres, biospheres, coastal zones and watersheds also play a key role in identifying resource circulation issues in such regional units and suggesting solutions for sustainable development and environmental conservation that can be carried out on both a local and a global scale.

Regional Planning／Earthquake Disaster Risk Management／Atmospheric Chemistry／
Ecosystem Production and Dynamics／Terrestrial Ecosystems Management／Aquatic Environmental Biology／

Regional Planning

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We seek local and regional scale solutions for global environmental issues by achieving well-balanced development among urban and rural areas through an appropriate evaluation and utilization of natural and social resources. Our field-based studies include the following topics:

Regional Planning use analysis

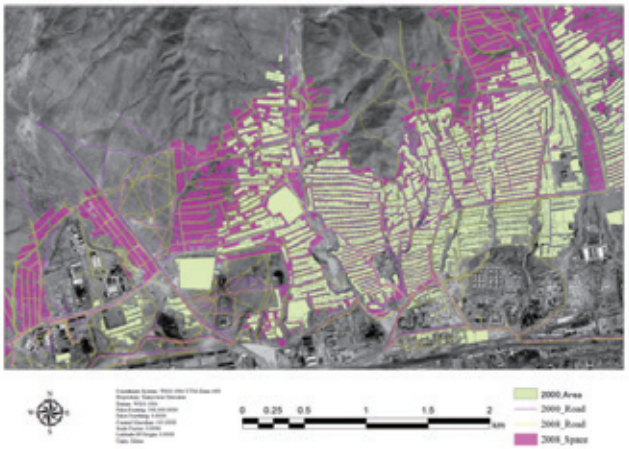
Formulating strategies for optimal Regional Planning use management in rural areas and urban fringes by means of analysis and modeling of land/water use change utilizing remote sensing/GIS (land use planning with geocomputation, analysis of local characteristics by spatial data mining, and spatial modeling of urban expansion in Asian megacities).

Designing a region

Setting directions and strategies for the future of various regions, based on an understanding of their natural and social characteristics, including social capital and community development, utilization of local resources in Japanese rural areas.

Sustainable rural development in Asia and Africa

Seeking development approaches that focus on local resources and indigenous knowledge such as environmental restoration and food production management in Indochina, indigenous agriculture and rural development in developing countries, ecosystem networks and human activities in Mongolia, and participatory water management in Egypt.



Monitoring of urban sprawl using satellite imagery

Earthquake Disaster Risk Management

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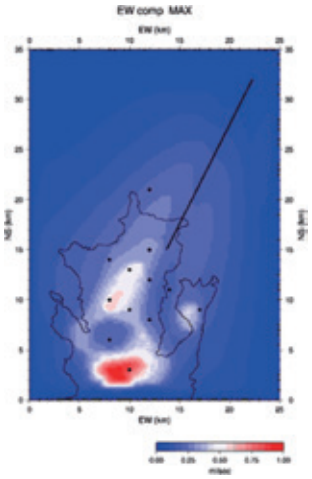
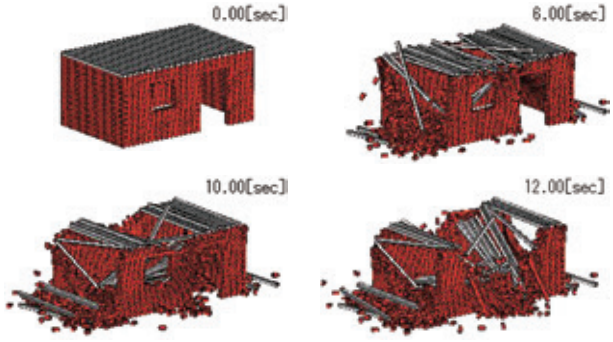
Earthquakes cause damage to our built environment and disrupt our social systems. Our laboratory studies cover a broad field, ranging from the estimation of strong ground motion in the near fault zone to the combined effects of strong ground motion and tsunami, and investigation of the mechanisms responsible for structural damage and human injury. Our goal is to achieve effective earthquake risk reduction, accomplished via analysis of the earthquake loss chain of causation, and to develop effective mitigation measures for each link in that chain. This involves:



Maximum velocity of seismic ground motions in Kyoto

(1) Numerical simulation of seismic ground motions
(2) Analysis of the failure phenomena in masonry buildings during earthquakes
(3) Investigation of the mechanisms responsible for injuries and fatalities resulting from earthquakes, and the development of suitable simulation techniques



Failure process for masonry structures

Atmospheric Chemistry

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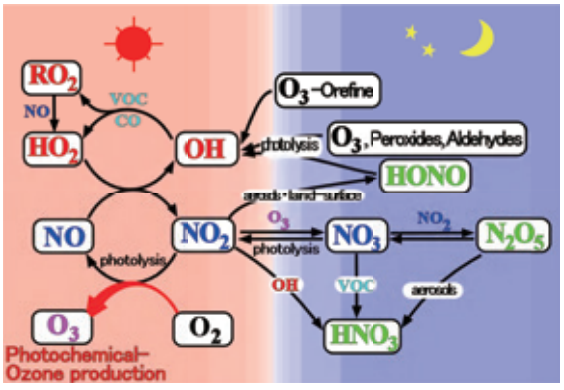
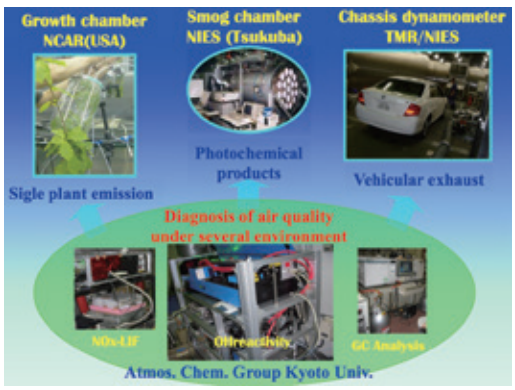
We investigate atmospheric chemistry, mainly focusing on the issue of photochemical ozone formation. Despite the apparent downward trends for both NOx and VOCs (precursors of photochemical oxidants) detected in mega-cities in many advanced countries, including Japan, photochemical oxidants have still increased in recent years.

We are trying to determine the cause of this upward trend. We are developing ultrasensitive and highly precise instruments to measure reactive trace species such as HOx radicals and NOx and we are using these instruments to obtain information about possible sources of air pollutants, such as vehicles.

Our final goal is to integrate the knowledge obtained from our observations and considerations in order to provide a sound scientific basis for the improvement of air quality.



Mechanism of oxidant formation



Research activities

Ecosystem Production and Dynamics

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We investigate dry matter production, plant community dynamics and plant ecological and physiological functions that produce the various ecosystem patterns observed in forests and other major ecosystems, based primarily on two perspectives.

First, we study structural dynamics and its mechanisms in forest ecosystems. This involves tree-ring analysis, mathematical models and ecological measurements being used in combination. Carbon dynamics and carbon accumulation in boreal forests are being studied in Canada, Finland, Estonia, Russia and Japan along with their past patterns. Boreal forests are the ecosystems where the effects of global warming are likely to appear first.

The second research approach focuses on analyzing the internal structure of stem wood. From the perspective of ecological wood anatomy and using both stable isotopes and tree eco-physiological techniques, it examines the relationships between the size and distribution of water-conducting vessels and leaf opening, shoot extension and the growth rate of trees. Trees in tropical regions, such as Thailand and Malaysia, are being examined along with those found in temperate climates.


Fig.1


Fig.2

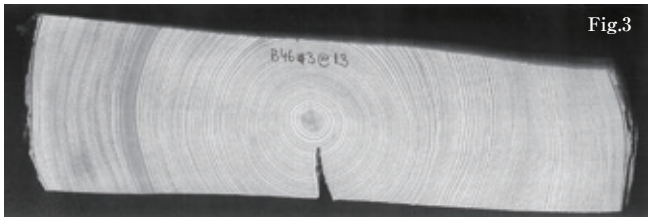
Fig.3

Fig. 1: Litter traps installed in a pine forest site in northwestern Canada
Fig. 2: A tropical seasonal forest with deciduous trees in the dry season
Fig. 3: A tree-ring sample used for estimating tree growth and past stand structure

Terrestrial Ecosystems Management

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Our continued existence depends heavily upon terrestrial ecosystems that include air, water, soils, plants and animals. We also influence the functioning of terrestrial ecosystems and act as one of the components. The recent increase in human activities adversely affects ecosystems and the environment at both the local and global levels, in the form of desertification, water and soil pollution and land degradation.

Our laboratory is engaged in a broad range of studies on terrestrial ecosystems management. The study topics include soil characterization, fertility mechanisms and maintenance, the utilization and conservation of soil resources, the mechanism of soil degradation and its remediation, and the reappraisal of indigenous agro-ecosystems management techniques in the humid and semi-arid tropics. We also study holistic approaches to rural development and ecosystems management that can be used to enhance human welfare and security in Japan, Asia and Africa.


Clear-cutting of tropical lowland forest in Indonesia


Honeycomb used as a non-timber forest product (Cameroon)

Aquatic Environmental Biology

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We examine the ecology and ecological production systems of aquatic biological resources from various points of view. In particular, we investigate integrated coastal zone management, based on an understanding of the ecological relationship between terrestrial and coastal areas, including productivity and biodiversity, which are strongly affected by human activities.

Connectivity of hills, humans and oceans

We examine the ecological links between forest, river, human and coastal ecosystems, and the impacts of human activities on coastal biological production systems. These concepts are then used to identify suitable methods for aquatic zone management in order to achieve future sustainable development.

Ecology of aquatic organisms

We study production systems of aquatic biological resources, focusing on energy flow from nutrition and primary production through to macrobenthos and fish, emphasizing the life history, survival, growth, movement and feeding characteristics of key species.

Management of aquatic biological resources

We examine management approaches that focus on resources produced by specific aquatic environments in local areas. We develop appropriate methods to manage resources, restore environments and enhance stocks.

Set net operation at Tai, Maizuru, Kyoto

Introduction of Academic Staff

Negative environmental impacts of agriculture

Professor Shinya FUNAKAWA
Terrestrial Ecosystems Management (Soil science)

How can we manage agricultural practices while mitigating their negative impacts on the environment?

It is widely believed that agriculture is environmentally friendly. However, we often observe that agricultural practices actually degrade the local environment. Since we cannot survive without food production, we have to develop an approach to agricultural management which does not lead to environmental degradation.

Water and mineral nutrients, both of which are essential ecological resources in agriculture, are usually not compatible with each other. Mineral nutrients are generally scarce in soils found in humid climates due to intensive mineral weathering, while the availability of water resources is usually a limiting factor for agricultural production in dry climates where soils are generally fertile in terms of their mineral nutrient content. To overcome these inherent limitations, the application of chemical fertilizer is a very common practice as part of modernized agriculture in humid regions, whereas irrigation is indispensable for farming in dry areas. However, a heavy dose of chemical fertilizer results in nutrient leaching from soils and consequent downstream contamination. Intensive irrigation causes the depletion of regional water resources as well as accelerated secondary soil salinization. Both examples suggest that agricultural practices can easily bring about environmental problems.

In the past, human beings have cultivated land by adjusting to the respective soil and climatic conditions in different areas. As part of my research activities, which are focused on local agriculture in countries such as Japan, South East Asia, Africa and Central Asia, I seek to identify the essential components of sustainable agriculture.

Domestic food production could decrease environmental deterioration in other countries

However, we should remember that lowland paddies in Japan could be free from the typical problems described above. That is, they provide both water resources and mineral nutrients at the same time. Japan experiences active orogenic movement with intensive volcanic activity, resulting in active erosion in upland streams and the downstream deposition of weatherable minerals that can release mineral nutrients in lowland areas. It is a well-known fact that lowland paddies in Japan have supported quite a high population since the Edo era without the help of chemical fertilizers.

It is, therefore, questionable whether we should practice Japanese agriculture based only on economic considerations. Two major approaches have been used when discussing future agriculture, one emphasizing the global economy and free trade, and the other prioritizing national food security. I strongly recommend that we include the negative environmental impacts of agriculture in these discussions. Japan possesses inherently good agroecological conditions with which we can minimize the negative environmental impacts of agriculture. We can contribute to decreasing environmental degradation in foreign countries that export environmentally high-cost food materials by producing our own food domestically. I believe that such a viewpoint should be included in discussions of future possibilities for agriculture in Japan.

Environmental Refugees and Development-Induced Displacement

Associate Professor Jane SINGER
Environmental Education

Ethical concerns raised by displacement

The theme of my research is human migration and displacement. This includes development-induced displacement as well as those displaced by natural disasters or environmental changes -- flooding, desertification, deforestation, landslides, long periods of drought and rising sea levels -- often linked to climatic change, who are often called "environmental refugees."

I'm especially interested in the ethical concerns raised by displacement. The question arises of what we mean when we call people "environmental refugees," because under international law, a refugee is someone who can't return to his or her home because of a legitimate fear of persecution, civil warfare or generalized violence. A legally recognized refugee has the right to be accepted by other countries and to be provided with basic human needs. But there is as yet no legal definition of environmental refugees or clarification of their legal rights by any international legal body. From an ethical standpoint we can argue that most of those people originate in developing countries, which are not primarily responsible for emitting the greenhouse gases that are linked to climate change. Because the developed countries cause most of the emissions, under the "polluter pays" principle, don't they bear responsibility for accepting and providing for environmental refugees?

Displaced by a hydropower dam in Vietnam

I am currently involved in a research project in central Vietnam, examining ethnic minority villages displaced by construction of a hydropower dam. Many developing countries rely on cheap, plentiful hydropower to supply their growing energy needs, but dam construction too often displaces and impoverishes people.

Resettled populations may receive compensation for their original homes and land, and they may benefit from improved infrastructure, health care and educational opportunities, but this often comes at a price. Replacement land is usually much less productive than their original farm plots, so that even though they can transition from subsistence farming to cash crop agriculture and recompensed manual labor, displaced residents may no longer have basic food security for their families. For ethnic minority residents, who make up a disproportionate percentage of those displaced in Vietnam, low education and adaptive capacity makes it even more difficult to recover from the shock of resettlement.

According to a 1986 United Nations General Assembly declaration, everyone has the right to participate in and enjoy the benefits of development. In this case, some people suffer while others, particularly industry, urban areas and the rising middle class, reap the benefits of hydroelectric generation. Development-induced displacement raises ethical questions about how to apportion benefits equitably.

School of Global Environmental Studies (Educational Body)

The School of Global Environmental Studies is composed of the "Doctoral Program in Global Environmental Studies," designed to foster outstanding researchers responsible for further development of the new field of global environmental studies, and the "Master's Program in Environmental Management" and "Doctoral Program in Environmental Management," both designed to train outstanding practitioners capable of addressing environmental issues from the local to the global level. The educational goals of these programs are shown in the following table.

Doctoral Program in Global Environmental Studies

This program fosters researchers capable of working at the international level by tackling global and local environmental issues using innovative approaches and methodologies drawn from various fundamental academic fields.

Master's Program in Environmental Management

This program trains internationally-minded practitioners with the knowledge and practical skills required to tackle environmental problems from the local to the global level. This program also fosters researchers capable of working at the international level by addressing global and local environmental issues using approaches and methodologies drawn from various fundamental academic fields.

Doctoral Program in Environmental Management

This program fosters practitioners with advanced management expertise and the extensive knowledge and skills required to address environmental issues from the local to the global level. This will enable them to make a practical contribution when working in international settings.

Students participating in any of the above programs may enroll in both compulsory and elective courses offered in English, in keeping with the Graduate School's aim to train professionals capable of working in an international setting. Students seeking to further their interdisciplinary knowledge base are also able to take credited lecture courses from other schools in Kyoto University.

Doctoral Program in Global Environmental Studies

This program accepts students who have obtained a master's degree or the equivalent in various fields. The program encompasses the Department of Global Ecology, the Department of Technology and Ecology, and the Department of Natural Resources of the Hall of Global Environmental Research, as well as Sansai Gakurin. Students' specialized study themes are selected from a vast range of themes related to global environmental studies, based on prior study and approaches available in the humanities and social sciences as well as in the areas of natural science, agriculture and engineering. After receiving a doctoral degree, students may work at universities or environment-related government/private-sector research organizations.

1 Curriculum structure

In order to develop outstanding researchers, course guidance is provided, as needed, on subjects offered under the Master's Program in Environmental Management, focusing primarily on lectures and seminars.

An academic supervisor and a sub-supervisor are assigned to each student upon entry into the university, and the student receives interdisciplinary guidance.

2 Progress towards the degree

First year: Academic supervisor selected; research plan drafted, reviewed and presented; preliminary thesis report written; and enrollment in exercises and seminars.
Second year: Enrollment in exercises and seminars.
Third year: Second thesis report written; enrollment in exercises and seminars; submission, review and defense of a doctoral thesis; Doctoral Degree in Global Environmental Studies awarded to student.

The standard time taken to complete the program is three years. However, exceptional students may be able to complete the degree in less time.

3 Admission information

Applicants will be graded according to the sum total of their marks for English ability (evaluated on the basis of TOEFL iBT (preferred), TOEFL PBT, TOEIC SP or IELTS test scores) and interview performance (specialized knowledge of the applicant's chosen study area and presentation of a research plan).

Master's Program in Environmental Management

In order to gain the skills needed to become outstanding environmental management professionals or environmental researchers, students are required to participate in a lengthy internship study. Based on practical experience gained outside of the university, students gain professional skills that will enable them to write an innovative master's thesis. After completing the master's degree, students may continue on to the doctoral program in order to obtain advanced professional and academic research skills or may choose to work for national or local government organizations, international organizations, environment-related departments of industries, environment-related industries, or environment-related NGOs, among others.

1 Curriculum

The core requirements of the Master's Program in Environmental Management are courses in the theoretical foundations of global environmental studies (Global Environmental Policy and Economics, Global Environmental Engineering, Management of Global Resources and Ecosystems, Environmental Ethics and Environmental Education). The student studies environmental management fundamentals and theories, and attends seminars corresponding to the student's area of interest. After that, the student completes an internship and then submits a master's thesis.

Students also attend environmental management seminars, which include special lectures by invited lecturers, fieldwork, experiments and practical study, and a literature review, all of which serve to instill in the student the fundamental knowledge and skills needed for environmental research or practice at the international level.

2 Internship

An internship is a compulsory part of the curriculum of the Master's Program in Environmental Management. Individual education based on practical experience outside the classroom enables students to acquire competence in addressing global environmental issues. The Graduate School of Global Environmental Studies has arrangements with a wide range of domestic and international environmental research institutions and organizations that currently serve as hosts for internship training. Previously, students have been placed as interns at governmental research institutes, private research organizations, foreign universities, and international organizations such as the United Nations and international NGOs.

Two kinds of internship are available for students: Long-term internships, which require students to spend at least three months at one site in order to train and cultivate practical skills, and short-term internships of one to two months for students whose research objectives are best achieved through brief practical experience. (For short-term internships, the submission of preliminary thesis work is required.)

3 Progress towards the degree

First Year: Course work, drafting of internship study plan, internship.
Second Year: Submission and review of master's thesis for the Master's Degree in Global Environmental Studies.

4 Admission information

Applicants will be graded according to the sum total of their marks for English ability (evaluated on the basis of TOEFL iBT (preferred), TOEFL PBT, TOEIC SP, or IELTS test scores), general knowledge of the global environment, basic knowledge of the applicant's choice of study area and interviews (to assess specialized knowledge gained over the course of the undergraduate program, the study plan, and the applicant's suitability for the master's program).

Doctoral Program in Environmental Management

This program aims to train professionals capable of functioning in an international setting by equipping them with the comprehensive knowledge and skills needed for resolving conflicts and managing global environmental issues. Internship study (domestic or overseas) and the preparation of a doctoral thesis help students develop the skills required for environment-related work after graduation. Graduates of the doctoral program are expected to find employment in national or local government, international organizations, environment-related departments of industries, environment-related industries, environmental NGOs, universities, or government/private-sector research organizations with an environmental focus, among others.

1 Curriculum

In order to cultivate outstanding environmental management practitioners and researchers, course guidance is provided, as needed, on subjects offered under the Master's Program in Environmental Management, focusing primarily on lectures and seminars. The student also completes an internship program lasting approximately six months, and then submits a doctoral thesis.

An academic supervisor and sub-supervisor are assigned to each student upon entry into the university, and the student receives interdisciplinary and practical guidance.

2 Internship

An internship is a compulsory part of the curriculum of the Doctoral Program in Environmental Management. Individual education based on practical experience outside the classroom enables students to acquire competence in addressing global environmental issues.

The Graduate School of Global Environmental Studies has arrangements with a wide range of domestic and international environmental research institutions and organizations that currently serve as hosts for internship training. Previously, students have undertaken internships with governmental research institutes, private research organizations, foreign universities, and international organizations such as the United Nations and international NGOs. Doctoral students must spend at least five months training and cultivating practical skills at their internship sites. After returning to the Graduate School, students prepare their doctoral theses by drawing upon their experiences outside the classroom.

3 Progress towards the degree

First year: Academic supervisor selected; research plan drafted, reviewed and presented; preliminary thesis report written; preparation of an internship plan, and enrollment in exercises and seminars.
Second year: Internship
Third year: Second thesis report written; enrollment in exercises and seminars; submission, review and defense of a doctoral thesis.

Doctoral Degree in Global Environmental Studies awarded to student.

The standard time taken to complete the program is three years. However, exceptional students may be able to complete the degree in less time.

4 Admission information

Applicants will be graded according to the sum total of their marks for English ability (evaluated on the basis of TOEFL iBT (preferred), TOEFL PBT, TOEIC SP, or IELTS test scores) and interview performance (to assess relevant research skills and specialized knowledge gained over the course of master's study or practical achievement in relation to environmental management, as well as their research plan for the doctoral program).

*Note for applicants from overseas

In keeping with the international focus of this Graduate School, we warmly welcome applications from overseas students to all our programs. International applicants to the Master's Program in Environmental Management should note, however, that some of the credited electives offered by the school may be taught only in Japanese. Applicants are strongly advised to consult with their intended academic supervisor for further information on what classes are available. International applicants should also note that while proficiency in Japanese is not a requirement for the Master's Program in Environmental Management, a degree of Japanese speaking, listening comprehension and reading ability may enrich their social and academic interactions during their study at the Graduate School.

Voices from Students

VOICE 1

Ryo NAKAMURA
Landscape Ecology and Planning

Because GSGES (Graduate School of Global Environmental Studies) offers classes in various fields including economics and ecology among others, this makes it possible for you to cultivate a global perspective through which to approach today's environmental issues. In addition, you get a sense that your knowledge and thinking ability are improving day by day because the classes provide many opportunities for discussion with students from different countries who are involved in different fields of study.

One attraction of the GSGES internship program is that you can tackle current environmental issues not only in Japan but also overseas. I did my internship with the National Parks Board in Singapore. Through my daily activities, such as surveying fauna and flora, and workshop activities, I learned about the biodiversity problems faced by nature reserves and management practices aimed at resolving those problems. In addition to the practical experience, I found that communicating with officers who have a range of knowledge and perspectives was very stimulating and was an invaluable experience that I could not get in everyday campus life. Now my Singapore experience is incorporated into my field of study.

You develop global perspectives in GSGES classes. And you approach various problems from such perspectives in your internship, while gaining practical experience. Following the internship, you incorporate the experience into your field of study. You can keep advancing through GSGES educational programs.

VOICE 2

Yi-chun CHEN
Global Ecological Economics

I think the emphasis on interdisciplinary studies and the provision of a number of lectures conducted in English make GSGES a special graduate school. The school also seeks to foster academic interaction and cooperation with other institutions and organizations, both in Japan and overseas. GSGES students typically begin their research by identifying issues relating to human society and global environmental problems. They are then instructed to find the optimal methodology in each academic field in order to further their research on their chosen topics. This is what I regard as the "GSGES Way" — a way to access environmental studies and to conduct research. It is an approach that has attracted many students of various nationalities and with different academic backgrounds. Students with a passion for solving environmental problems attend lectures, engage in discussions, and make presentations together, regardless of their individual academic fields. I think that this kind of training is vital because cooperation among various disciplines is necessary for solving environmental problems; moreover, it is invaluable experience which can help us a great deal, either in our future careers or in our research activities.

GSGES provides various lectures for master's program students, together with a compulsory three-month, long-term internship program. My research focus is on exporting of environmental technologies from Japan, so I applied for an internship program conducted by the United Nations Industrial Development Organization, ITPO Tokyo. The work experience has given me a chance to observe at first hand how the Office functions and to exchange ideas with people whose work is related to environmental technology transfer.

GSGES has organized academic fields not only in science but also in the social sciences and humanities concerning environmental studies. For example, there are academic fields such as global ecological economics, with which I am affiliated, as well as policy, marketing management, and others. Currently, there are joint seminars for the above-mentioned three fields, each year. This provides a platform for interdisciplinary discussions and opinion exchange, especially within the disciplines of the social sciences, while also offering students opportunities to make research presentations.

I have enjoyed my time at GSGES due to its diverse student population and range of disciplines, and also for its practical pursuit of solutions to problems faced by societies. This is why I had no hesitation in deciding to continue with the doctoral program at GSGES.

Voices from Graduate Students

Graduated from
Master's Program (2012)

Mizuki HOSOKAI

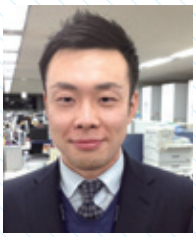
Tsushima City

I am currently working at Tsushima Island, Nagasaki Prefecture, as a member of "Shimaokoshi-Kyoudoutai," a project to revitalize local communities initiated by the Ministry of Internal Affairs and Communications. My primary task is to foster local revitalization through education-related activities, such as conducting interviews with local residents, supporting community studies, and establishing school curricula to enable local knowledge to be passed on to the next generation. I am very pleased to have this challenging job.

One attraction of GSGES is that it provides a number of opportunities for us to broaden our perspectives through group work and presentation-making, which are features of the educational programs. In addition, it is possible to concentrate a lot of class work into the first semester of Year 1 and then manage the remaining time for our own study activities. In my case, I visited several places in both Japan and other countries and had valuable opportunities to talk with local residents. Through these experiences, I became interested in local regions of Japan, ultimately deciding to work on Tsushima Island, situated on a national border.

Having access to alumni who are active at home and abroad serves as a great incentive for me when I feel the need to recharge my motivation or improve my abilities through my current job. Thanks to my GSGES experiences, my days have been somewhat fuller.

We are frequently required to be able to conduct dialogues based on our own abilities in order to unearth the root of a problem and to obtain vital information through conversations with others. The knowledge acquired during my master's course is now contributing to my own current task.



Graduated from
Master's Program (2012)

Tomoharu YAMAUCHI

Itochu Corporation

My desire to experience an internship at an international organization was one of the reasons I decided to come to GSGES. As an undergraduate, I was involved in NGO activities concerning environmental issues such as overseas dam problems, while I was majoring in analytical chemistry. At GSGES, I completed a four-month internship at the Stockholm Environment Institute, Asia office in Thailand, with the theme of how to adapt to global warming, as a member of the Global Environmental Policy study area. During my internship, I helped to support international conferences and drafted reports regarding developing countries. In addition, at GSGES I enjoyed lectures and group work in English together with international classmates, which is one of the special features of the graduate school, and I was able to learn about environmental issues based on differing values. The mutual cooperation and logical thinking which were acquired through my overseas internship and research are now useful for my work at a private company. GSGES provides many opportunities to expand one's potential.

Graduated from
Doctoral Program (2013)

Noralene M. UY

Independent Consultant

GSGES provides an excellent venue for holistic education and training that encourages one to pursue his or her full potential. The lectures and seminars in the laboratory and graduate school, as well as internships with UNISDR and the ASEAN Secretariat, equipped me with the knowledge and practical skills to take on varying responsibilities in my field of expertise at both the international and local level. In addition, studying in an international setting not only exposed me to cultural diversity but also sensitized me to the highest standards of excellence. More importantly, it opened doors for me because I was able to develop networks among peers.

I am currently engaged as a consultant for both the United Nations Development Programme Philippines and the Asian Development Bank (ADB). In the former position, I review the policy and institutional landscapes of disaster risk reduction and management (DRRM) and climate change adaptation (CCA) in the Philippines for harmonization of DRRM and CCA policies and development of the capacities of national government agencies and local government units. In the latter role, I am involved in developing country-specific disaster risk management briefs to assist integration of disaster risk concerns into the Country Partnership Strategy for ADB developing-member countries. The GSGES experience has enabled me to contribute to global activity on disaster management and climate change adaptation, which I will continue to pursue in earnest.

Graduated from
Master's Program (2007)

Aya OKADA

Japan International Cooperation Agency (JICA)

My internship experience in Vietnam while studying at GSGES influenced my desire to work in the area of international cooperation. At GSGES, I learned about community-based disaster management, not only in Japan but also in developing countries. In my work, I have been in charge of disaster preparedness/prevention projects in Central America and Africa. I am currently stationed in JICA's Burkina Faso office in Africa, taking charge of various projects involving water and sanitation.

Since many countries in Africa have poor living standards and do not meet the requirements for conducting disaster management projects, the direct application of my GSGES studies to my work is limited. However, there are many other aspects that have proven useful, such as learning about numerous different approaches to the environment from various fields through a variety of curricula, and being in an academic research environment that values fieldwork and is not just limited to laboratory work.

By making use of the diversity of research fields, the support provided for field research and the wide-ranging networks that are unique to GSGES, I was able to establish an effective basis for working in the international cooperation sector.

Sansai Gakurin

Sansai Gakurin was established in 2002 to promote and support the activities of the new Graduate School of Global Environmental Studies (GSGES) at Kyoto University by facilitating the exchange of ideas across relevant disciplines, both inside and outside the university. "Sansai" refers to the traditional East Asian triad of heaven, earth and humanity that embraces the phenomenal world. "Gakurin" means a "grove of scholars." The 2001 mission statement of Kyoto University promulgated its intention to pursue harmonious coexistence within the human and ecological community on this planet.

1) Activities designed to integrate all academic disciplines related to global environmental studies and coordinate the outreach activities of GSGES.

To broaden knowledge of global environmental studies at Kyoto University, Sansai Gakurin holds regular events such as the 'Kyoto University Forum (global environmental forum)' and the 'Hannari Kyoto Shimadaijuku' (each three times a year), and organizes lecture/discussion gatherings by faculty open to all students and faculty. In addition, Sansai Gakurin co-organizes public international seminars and forums related to the Graduate School of Global Environmental Studies (GSGES), and collaborates with organizations within Kyoto city to engage the public over environmental concerns.

2) Activities designed to promote research.

Sansai Gakurin supports innovative medium- and long-term research by the GSGES faculty to integrate the research activities from diverse fields and support achieving a more harmonious balance of man and nature.

Sansai Gakurin also regularly publishes the Sansai Newsletter to promote GSGES activities.

3) Activities designed to support education.

Sansai Gakurin supports various ongoing international education programs by GSGES faculty.

Recent Collaborating Institutions for Internship Study

Private Sector

- Asia Air Survey Co., Ltd
- AMITA Institute for Sustainabale Economies
- Hatanaka Kumiko Architecture Design Office
- Okumura Corporation
- Kao Corporation
- Environmental Assessment Center Co.,Ltd
- Kubota Environmental Service Co., Ltd
- Sumitomo Osaka Cement Co.,Ltd.
- Sumitomo Bakelite Co., Ltd
- Taisei Corporation
- Takano landscapePlanning ,CO Tokachi Office
- Chugai Technos corporation
- Denso Corporation
- TORAY TECHNO CO., LTD.
- Tobimushi Inc.
- Nakabori Soil Corner
- IBM Japan Services Company Ltd.
- Japan Promotion center for Advanced Technology (JPAT)
- Panasonic Corporation
- Mitsubishi UFJ Research and Consulting CO.,Ltd
- Munemoto Shinsaku Architecure Design Company
- LAGO.Co.,Ltd
- Research Institute for Natural Capital Co., Ltd

Ministry

- Ministry of the Environment
- National Institute of Health Sciences

Local Government

- Kyoto City, Waterworks Bureau
- Kyoto prefecture, Kizugawa City
- Kobe City, Waterworks Bureau
- Shiga Prefectual Moriyama Junior and Senior High School
- Tokyo Metropolitan Government, Environment Bureau
- Iida city office, Nagano prefecture
- Tsushima City, Nagasaki Prefecture
- Minami Awaji City, Hyogo Prefecture
- Wakayama Prefecture, Tanabe City

NPO/NGO

- Oxfam　Japan
- Institute for Sustainable Energy Policies
- Japan Center for a Sustainable Environment and Sociaty (JACSES)
- NPO Groundwork Mishima
- KES Environmental Management System Standard
- Satoyama Network in Seya
- NPO Satoyamanet Ayabe
- Sea Turtle Association of Japan
- Habitat for Humanity Japan
- Mori wa Umi no Koibito

Independent administrative agency/Research Institution

- Research Institute for Environmental Sciences and Public Health of Iwate Prefecture
- Japan International Cooperation Agency (JICA)
- National Institute for Environmental Studies
- National Institute of Population and Social Security Research (IPSS)
- Lake Biwa Environmental Research Institute
- Shimane Prefectural Mountainous Regions Research Center
- Research Institute for Humanity and Nature (RIHN)
- Public Works Research Institute
- Earthquake Disaster Mitigation Research Center (EDM) National Research Institute for Earth Science and Disaster Prevention (NIED)

Corporate Organization

- World Wide Fund for Nature Japan
- Central Research Institute of Electric Power Industry (CRIEPI)
- Nippon Intemation Cooperation for Community Developmen (NICCO)
- Institute for Global Enviromental Strategies (IGES)
- MIT

Others

- Ishizuti Fureai village
- See-D Committee
- Conservation International Japan

Overseas

- Argovia
- Beijing Normal University
- Burapha University, Department of Civil Engineering
- Center for Environmental Planning and Technology University (CEPT)
- Centre for Alternative Technology (Wales, UK)
- Centre for Appropriate Technology and Development (CATD)
- Chulalongkorm University
- Danag University of Technology (DUT)
- Department of Architecture, Hue College of Sciences
- Greifswald University / Institute of Biochemistry
- Hanoi University of Science and Technology
- Hue University of Agriculture and Forestry, Center for Agricuktural Forestry Research and Development (CARD)
- International Institute of Tropical Agriculture (IITA), Cameroon
- JADE Bangladesh
- JETRO Dusseldorf
- Kasetsart University
- Laguna Lake Development Authority
- Mahidol University, Thailand
- National Parks Board, Singapore
- National Yunlin University of Science and Technology
- Philippine Society of Youth Science Clubs (PSYSC)
- Royal Society for Protection of Nature
- Royal University of Agriculture
- SEEDS India
- State of California Department of Fish and Game
- Stockholm Environment InstituteAsia Center
- The David Suzuki Foundation
- The Energy and Resources Institute (TERI)
- The Office of Civil Defense, Region X, Philippines
- UNESCO Bangkok Office
- UNESCO Hanoi Office
- United Nations Framework Convention on Climate Change (UNFCCC)
- United Nations Volunteers Headquarters Office (UNV)
- United States Environmental Protection Agency National Exposure Reseach Laboratory
- Universiti Kebangsaan Malaysia
- University College Cork.
- University of Caen
- University of Madras
- Universiti Malaysia Sabah
- University of the South Pacific
- WIND IN NEPAL PVT LTD.
- World Wide Fund for Nature（WWF）Kenya Office
- Xinjiang Institute of Ecology and Geography of Chinese Academy of Sciences
- NPO Apcas Sri Lanka Office
- United Nations Industrial Development Organization
- Tsinghua University
- Qingdao landscape and sanitation management center, China
- Action for greening Sahel

After Graduation

Master's Program in Environmental Management

Private Sector

- Accenture Japan Ltd.
- Asahi Industry Co., Ltd.
- Asia Air Survey Co., Ltd.
- Adeka Engineering &Construction Corporation
- Amita Holdings Co., Ltd.
- Amita Institute for Sustainable Economies Co., Ltd.
- Aeon Retail Co., Ltd.
- Itochu Techno-Solutions Corporation
- Itochu Corporation.
- Iwatani Corporation
- Internet Business Japan Co., Ltd.
- Water Agency Inc.
- SE Corporation
- S.T. Japan Inc.
- NTC International Corporation
- NTT Communications Corporation
- NTT DATA Corporation
- Osaka Gas Co., Ltd.
- Okumura Corporation
- ORIENTAL CONSULTANTS Co., Ltd.
- Onward Kashiyama Co., Ltd.
- Kao Corporation
- Kajima Corporation
- KANAE Coporation
- Kanebo Cosmetics Inc.
- KANSAI COKE & CHEMICALS Co., Ltd.
- Kyocera Corporation
- Kuraray Co., Ltd.
- Green Power Investment Corporation
- Kurita Water Industries Ltd.
- Kenko Mayonnaise Co., Ltd.
- CTI Engineering Co., Ltd.
- CTI Engineering International Co., Ltd.
- Kodama Corporation, Ltd.
- Komatsu Ltd.
- Cyber Agent Inc.
- XYMAX Corporation
- Sapporo Breweries Ltd.
- Sanyo Electric Co, Ltd.
- Coelacanth K&H Architects Inc.
- JFE Engineering Corporation
- Sigmaxyz, Inc.
- Jiji Press, Ltd.
- Sharp Corporation
- Showa Shell Sekiyu K.K.
- Ns Solutions Corporation
- Sumitomo Corporation
- Sumitomo Bakelite Co., Ltd.
- Seijo Ishii Co., Ltd.
- Sekisui House, Ltd.
- Soken Co., Ltd.
- Sojitz corporation
- Soft Bank Corp.
- Daikin Industries, Ltd.
- Taisei Corporation
- Daihatsu Motor Co., Ltd.
- Takara Shuzo Co., Ltd.
- Takara Bio Inc.
- Tamanoi Vinegar Corporation
- Local Environment Plan
- Architects Regional Planners &Associates, Kyoto
- Bud of the Earth Co., Ltd.
- The Chunichi Shimbun
- Chubu Centrair International Airport
- Tecnos Japan Inc.
- Information Services International-Dentsu, Ltd.
- Tokyo Tatemono Co., Ltd.
- Toshiba Corporation
- Toray Industries, Inc.
- Deloitte Tohmatsu Consulting Co., Ltd.
- Toyota Tsusho Corporation.
- Toyota Boshoku Corporation
- The Nishinippon Shimbun
- Nippon Telegraph And Telephone
- West Japan Railway Company
- JGC Corporation
- Nihon Suido Consultants Co., Ltd.
- Nitori
- IBM Japan, Ltd.
- Nihonkai Consultant Co., Ltd.
- Nikkei Inc.
- Nippon Koei Co., Ltd.
- Japanese Consumer Co-operative Union
- Japan Finance Corporation Business
- Japan Tobacco, Inc.
- Nomura Research Institute, Ltd.
- Hakuhodo Inc.
- Pacific Consultants Co., Ltd.
- Panasonic Corporation
- Panasonic Ecology Systems Co., Ltd.
- Yamato Co., Ltd.
- beBit, Inc
- Hitachi Inspharma, Ltd.
- Hitachi, Ltd.
- Hitachi Zosen Corporation
- Hitachi Solutions, Ltd.
- Fidelity Worldwide Investment
- Fujitsu Research Institute
- Fuji Electric Co., Ltd.
- Future Architect, Inc.
- Pricewaterhouse Coopers Co., Ltd.
- Bridgestone Corporation
- PREC Institute, Inc.
- The Procter & Gamble Company of Japan, Ltd.
- Bearing Point, Inc.
- Boston Consulting Group
- Sumitomo Mitsui Banking Corporation
- Mitsui Oil Exploration Co., Ltd.
- MITSUI & Co., Ltd.
- Mitsubishi Chemical Medience Corporation
- Mitsubishi Corporation
- Mitsubishi Research Institute, Inc.
- The Bank of Tokyo-Mitsubishi UFJ, Ltd.
- Mitsubishi UFJ Research and Consulting Co., Ltd.
- Mitsubishi Rayon Co., Ltd.
- Milbon Corporation
- Yamaha Corporation
- Unilever
- The Yokohama Rubber Co., Ltd.
- Yokohama Marunaka Seika Co., Ltd.
- The Yomiuri Shimbun
- Rakuten, Inc.
- Laplace System Co., Ltd.
- LIXIL Corporation
- Recruit Holdings Co., Ltd.
- Resona Bank, Ltd.
- Livesense Inc.
- Retec Engineering, Inc.
- ROKI Co., Ltd.
- Wako Pure Chemical Industries, Ltd.
- Wataru & Co., Ltd.

Ministry

- Ministry of the Environment
- Ministry of Economy, Trade and Industry
- Ministry of Land, Infrastructure, Transport and Tourism
- Ministry of Justice

Local Government

- Aichi Prefecture
- Amagasaki City
- Osaka Prefecture
- Kyoto City
- Kouga City
- Saijyo City
- Sapporo City
- Shiga Prefecture
- Tokyo Metropolitan Government
- Toyonaka City
- Tsushima City
- Hiroshima City

Independent administrative agency/Research Institution

- Japan Science and Technology Agency
- Japan International Cooperation Agency
- Japan External Trade Organization
- RIKEN

NPO/NGO

- Institute for Sustainable Energy Policies
- Kiko Network

Corporate Organization

- Global Environment Centre Foundation
- Global Environmental Forum
- Chuetsu Organization for Safe and Secure Society
- Deloitte Tohmatsu Tax Co.
- Rural Culture Association
- The Matsushita Institute of Government and Management

Others

- Institute of Scientific and Industrial
- Research, Osaka University
- Osaka Toin Junior and Senior High School
- Saijyo Industry Support Center
- High school teachers in Shiga Prefecture
- JICA Overseas Cooperation Volunteers
- Japanese Consumer's Co-operative Union
- High school teachers in Hyogo Prefecture
- Waseda University

Overseas

- Shenzhen City, China
- Cathay Pacific Airways
- Energy Natura
- Hare & Tortoise
- Hue University of Agriculture and Foresty Researcher
- Offshore
- Pacific Express
- Procter & Gamble Far East, Inc

Ph.D Program

- Osaka University
- Kyoto University
- University of Tokyo
- Hokkaido University

Doctoral Program in Environmental Management

Overseas

- Lloyd's Register Quality Assurance Limited
- SEEDS Asia
- United Nations International Strategy for Disaster Reduction
- Asian Disaster Preparedness Center [ADPC]
- Korea Institute of Construction Technology
- United Nations Environment Programme
- The United Nations office for Disaster Risk Reduction
- United Nations University
- Inter-American Development Bank
- Malaysian Medical Relief Society (MERCY Malaysia)

University/Research Institute

- Kyoto University
- Research Institute for Humanity and Nature

Private

- First class architect office
- Ex Research Institute Ltd.
- Shimadzu Corporation
- EY Japan

Ministry

- Ministry of Foreign Affairs of Japan

Doctoral Program in Global Environmental Studies

Overseas

- Bangladesh Agricultural University
- Hanoi University of Science and Technology
- Hue University of Agriculture and Forestry
- Nexus engineering consultants
- Queen's University, Canada
- Regional Environmental Planning Inc.
- Sun Yat-Sen University
- Transport and Communications University Lecturer
- Universidad Pontificia Bolivariana
- University of the Philippines Los Banos
- World Meteorological Organization
- United Nations Centre for Regional Development

University/Research Institute

- Technology Research Institute of Osaka Prefecture
- Kyoto University
- Kyoto Prefectural Agriculture, Forestry and Fisheries Technology Center
- Social Enterprise Research and Development Inc.
- National Institute for Environmental Studies
- National Institute of Advanced Industrial Science and Technology
- Shiga University of Medical Science
- Geo-Research Institute
- Chiba University of Commerce
- Nagano University
- Nanzan University
- The Institute Energy Economics, Japan
- JSPS Postdoctoral Research Fellow
- Japan Atomic Energy Agency
- Fukuoka University
- Hokkaido University
- Ritsumeikan University

Private

- Amita Institute for Sustainable Economies Co., Ltd.
- Kajima Corporation
- The General Environmental Technos Co., Ltd.
- Sunstar Inc.
- Shimadzu Corporation
- Macrovision Urban Planning & Architecture
- Mitsubishi UFJ Research and Consulting Co., Ltd.

Others

- Shimin Cooperation Law Office

List of Academic Staff

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Professor Makoto USAMI

Global Ecological Economics
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Associate Professor Akihisa MORI

Sastainable Rural Development
Professor Satoshi HOSHINO
Associate Professor Shizuka HASHIMOTO
Assistant Professor Kenichirou ONITSUKA

Resource Recycling Science
Professor Masaki TAKAOKA
Associate Professor Kazuyuki OSHITA
Assistant Professor Takashi FUJIMORI

Socio-Cultural Symbiosis
Professor Wataru SANO
Associate Professor Ayako IWATANI

Environmental Marketing Management
Associate Professor Akira YOSHINO

Environmental Perspectives in Asian Economic History
Professor Naoto KAGOTANI

Environmental Education
Professor Rajib SHAW
Associate Professor Jane SINGER

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Assistant Professor Hidenori HARADA

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Professor Takeshi KATSUMI
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Associate Professor Hirohide KOBAYASHI
Assistant Professor Chiho OCHIAI

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Assistant Professor Ryoma KAMIKAWA

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Assistant Professor Yosuke SAKAMOTO

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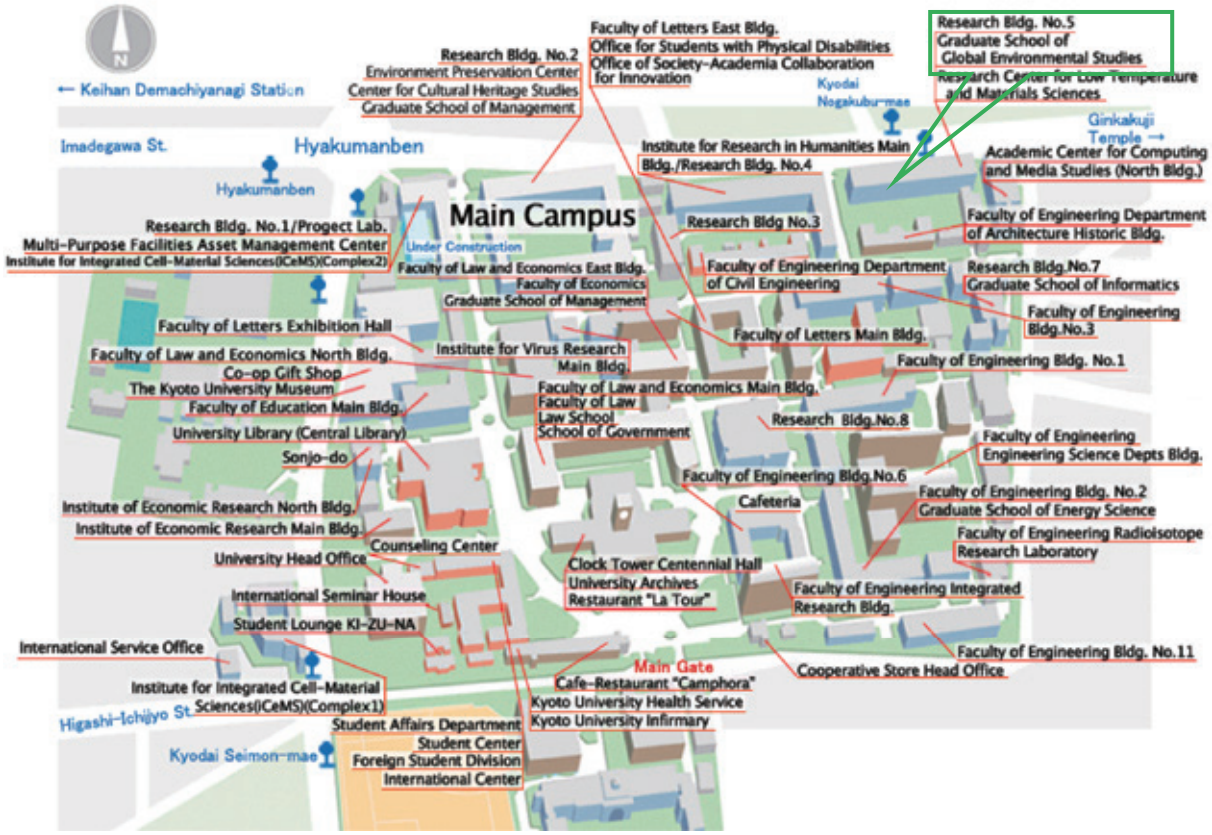
Associate Professor Naoki OKADA
Assistant Professor Masako DANNOURA

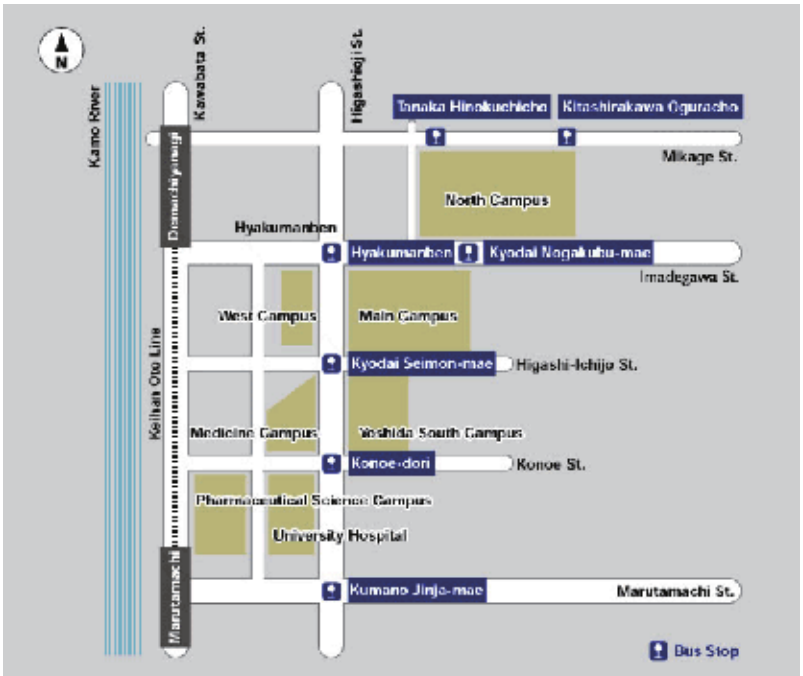
Terrestrial Ecosystems Management
Professor Shinya FUNAKAWA
Associate Professor Hitoshi SHINJO
Assistant Professor Tetsuhiro WATANABE

Aquatic Environmental Biology
Professor Yoh YAMASHITA
Assistant Professor Keita SUZUKI

Graduate School of Global Environmental Studies (GSGES) Location Map

<Yoshida main campus>





Graduate School of Global Environmental Studies

GUIDEBOOK 2015

地球環境学堂・地球環境学舎・三才学林　ガイドブック 2015

Issued : April, 2015

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