



# 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 2020

ガイドブック 2020

Think Globally, Act Locally





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 science and engineering, agriculture, law, economics and humanities. 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, Indonesia, Malaysia, Fiji and France. 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 have opportunities to participate in the fieldwork as well as a three month internship program. Two new projects -the "Environmental Innovator Program (EIP) -Cultivating Environmental Leaders across the ASEAN Region-" and "Japan Gateway: Kyoto University Top Global Program (JGP) Environmental Studies" were launched in 2015, for realizing internationalization of education and research and establishing international double/joint degree programs.

The 607 master's program graduates and 196 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**  
**KATSUMI Takeshi**

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# Introduction

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## 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.

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## 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.

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## 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.

## SCHOOL OF GLOBAL ENVIRONMENTAL STUDIES

- Global Environmental Studies
- Environmental Management

## HALL OF GLOBAL ENVIRONMENTAL RESEARCH

### Department of Global Ecology

- Global Environmental Policy
- Environmental Economics
- Global Ecological Economics
- Sustainable Rural Development
- Environmental Health Sciences
- Historical Geography and Culture
- Environmental Marketing Management
- Ontology of Environment and Technology
- Environmental Education

### Department of Technology and Ecology

- Environmentally-friendly Industries for Sustainable Development
- Environmental Infrastructure Engineering
- Global Environmental Architecture
- Biodiversity Conservation
- Landscape Ecology and Planning
- Environmentally-Friendly Energy Conversion

### Department of Natural Resources

- Regional Planning
- Urban Infrastructure Engineering
- Atmospheric Chemistry
- Terrestrial Microbiology and Systematics
- Terrestrial Ecosystems Management
- Integrated Environmental Studies
- Ecosystem linkages and Human society

# 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 / Environmental Economics / Global Ecological Economics / Sustainable Rural Development / Environmental Health Sciences / Historical Geography and Culture / Environmental Marketing Management / Ontology of Environment and Technology / Environmental Education

## Global Environmental Policy

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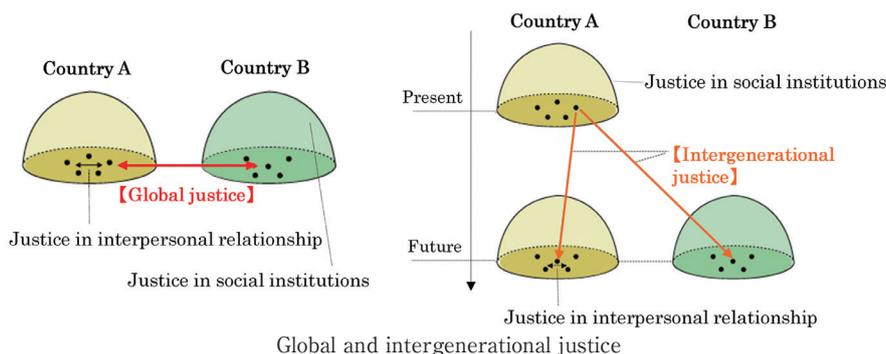
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In the laboratory of Global Environmental Policy, we explore normative and positive questions concerning environmental problems and policies on local, national, regional, and global scales. On one hand, foundational topics are studied from the perspectives of legal and political philosophy. One group of these topics concerns issues in global justice, one of which is the question of 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 issues

in intergenerational justice, notably the question of what are grounds for the obligation that the present generation might have toward future people.

On the other hand, we also conduct empirical research on international environmental law, environmental policy and its processes at national and local levels, and conservation-related activities by NGOs, businesses, and citizens. We explore these topics by using both qualitative case study methods and quantitative statistical techniques.



# Environmental Economics

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The purpose of this laboratory is to analyze climate change policies and energy policies from economics perspectives. In order to do so, we request all the applicants for this laboratory to study environmental economics as its theoretical foundation. Based on this, we focus on the following three research topics:

## [1] Economic analysis of climate change policies and their policy designs

We focus mainly on climate change policies among various environmental issues. As a role of social science, design of social institutions and policy instruments is one of the most important tasks. Environmental policy instruments (environmental taxes, emissions trading systems, subsidies, etc.) are main target of our research.

## [2] Renewable energies and electricity market liberalization

Renewable energy policies play a crucial role in the climate change policies. On the other hand, research of the future power systems that make the large-scale renewable energy generation and grid integration possible is also important. This laboratory promotes a research project that supports transition of power systems from the centralized one to more distributed one, by increasing renewable energies in the liberalized electricity market environment.

## [3] Renewable energies and regional rehabilitation

Unlike the fossil fuels and nuclear energies, renewables are the universally distributed energy resources for any regions. We are tackling the issue of how to link renewable energy development with the regional rehabilitation. Collaborating with municipalities, we are currently engaged in "regional added value analysis" and research on appropriate forms of business entities like "Stadtweke" or energy cooperatives.



Regional business model for promoting solar power in the City of Iida, Nagano Prefecture

# Global Ecological Economics

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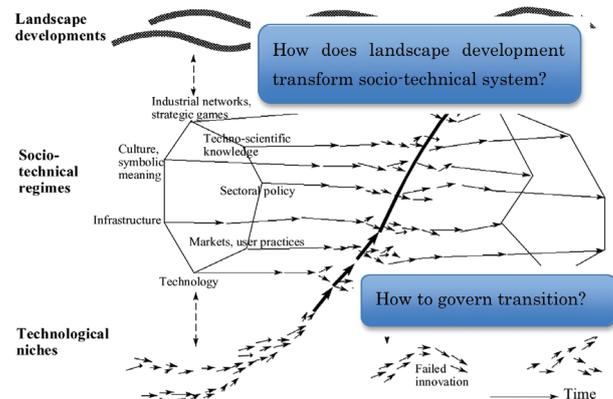
The 30 years of developments in environmental economics and policy studies proves it indispensable for socio-economic system to move toward the sustainable pathway, not to mention to technological and policy innovation and diffusion. In reality, however, socio-economic system, especially infrastructure is deeply embedded into the society, caught in a technological and institutional lock-in. Strategic planning, reflective learning, policies and institutions are required that enable niche innovations with sustainable technology to be a part of the regime, compete with the incumbent regime actors, and then dominate in the regime.

Against this background, we Global Ecological Economics have made economic analysis of **sustainability transition**, with special attention to, but not limited to:

- Economics of transition to sustainable energy, transport, agriculture and city
- Policies, institutions and financial mechanisms that advances sustainability transition
- International and domestic barriers that block sustainability transition

Students have taken their preferred cases in Japan, Asia, Europe, and America to make in-depth analyses.

The Global Ecological Economics is also joining in the Research Unit for Development of Global Sustainability of Kyoto University.



Multi-level perspective on sustainability transition

Source: Author compiled based on Geels, FW. Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study, *Research Policy* 31 (2002) 1257-1274.

# Sustainable Rural Development

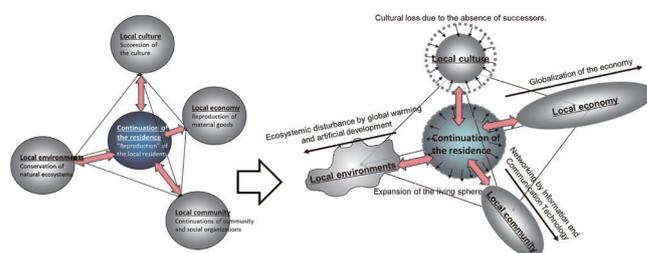
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Rural sustainability (RS) was traditionally maintained by preserving harmony within a geographically limited frame. This type of harmony was maintained by five components, as shown in the figure on the right. Because all of these components are associated 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.

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Industrialization urbanization and globalization have brought new environmental challenges. To assess the health risks associated with these environmental problems, the following components are essential:

- Sufficient information on various environmental hazards
- Accurate and precise exposure assessment
- Quantitative evaluation of exposure-response relationship
- Elucidating mechanisms by which environmental hazards cause health effects

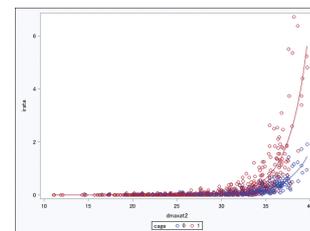
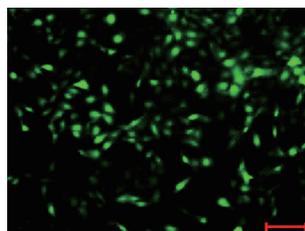
The goals of our division are to establish the methods for comprehensive evaluation of health risks of environmental factor and to prevent adverse health effects on the basis of mechanisms by which environmental hazards cause and to promote health in human populations.

Outline of study (Experimental studies)

- 1) To elucidate health effects of air pollutants and the underlying mechanisms
- 2) To identify responsible factors and the components of air pollutants that contribute to health effects
- 3) To elucidate health effects of environmental chemicals and the underlying mechanisms
- 4) To reduce health effects of environmental pollutants using technology of medical engineering

Outline of study (Epidemiological studies)

- 1) To elucidate health effects of air pollutants for human population
- 2) To evaluate health effects of climate change
- 3) To assess future health impacts of environmental policy
- 4) To develop exposure assessment model of environmental pollutants



(left) Oxidative stress in airway epithelial cells exposed to environmental pollutants (right) Scatter plot of ambulance dispatches due to heatstroke and apparent temperature

Our laboratory is also a 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.



# Ontology of Environment and Technology

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The aim of this laboratory is to explore (or to unfold) the implications for a non-metaphysical onto-logy (knowledge of the being) of our physical environment.

What we shall try is :

- to focus on the implications of cultural theories about the concept of nature examining European philosophy from the past three centuries (from Descartes, Hobbes, Spinoza, Rousseau, and Kant to von Uexküll, Heidegger, and Deleuze & Guattari) ;
- to understand the modernist mode of *forgetting* "in-the-world-ness" as part of Heidegger's reasoning, in order to overcome the subject object duality in view of a non-objectifying anthropocentric "knowledge" ;
- to analyse culture as the operation of mechanisms and *technologies* (ref. M. Foucault) of mediation to occupy the gap between matter and life, social and individual, the environment and human activities.

Our postmodern-biotechnological age, full of intelligent machines and cyborgs, is also an age of natural and enviromental crises. It is an urgent matter to investigate the natural environment so as to abandon unreservedly anthropocentrism in the life sciences, and to deconstruct a humanized image of nature.



## Environmental Education

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Research and educational activities in this study area are broadly subsumed under three themes: 1. Education for Sustainable Development 2. community resilience and 3. material cycles and low carbon systems. Through conducting research, internships and collaborative educational initiatives, faculty and students develop unique community-based approaches that raise awareness and transform behavior to achieve equitable and sustainable development.

Education for Sustainable Development (ESD) promotes diverse learning approaches in schools and communities to foster the competencies needed for a more sustainable future. Our activities include climate change, place-based and sustainability education; campus sustainability efforts; and education on the

Sustainable Development Goals (SDGs).

Community resilience studies focus on migration and displacement induced by development, disasters and climate change. We also engage in research on disaster risk reduction and post-disaster reconstruction, climate change adaptation and community-based resource management, aiming to improve community engagement, livelihoods and well-being.

Finally, we focus on material cycles and low carbon system approaches, with emphasis on municipal solid waste (MSW) including food loss and plastic waste, disaster waste, and energy saving awareness and behavior. Research and education are carried out in Kyoto and other local communities, on campus, and in developing nations in the Asia Pacific region.



Campus sustainability campaign



Presentations by students



Focus group community discussions

# 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 / Biodiversity Conservation / Landscape Ecology and Planning / Environmentally-Friendly Energy Conversion

## Environmentally-friendly Industries for Sustainable Development

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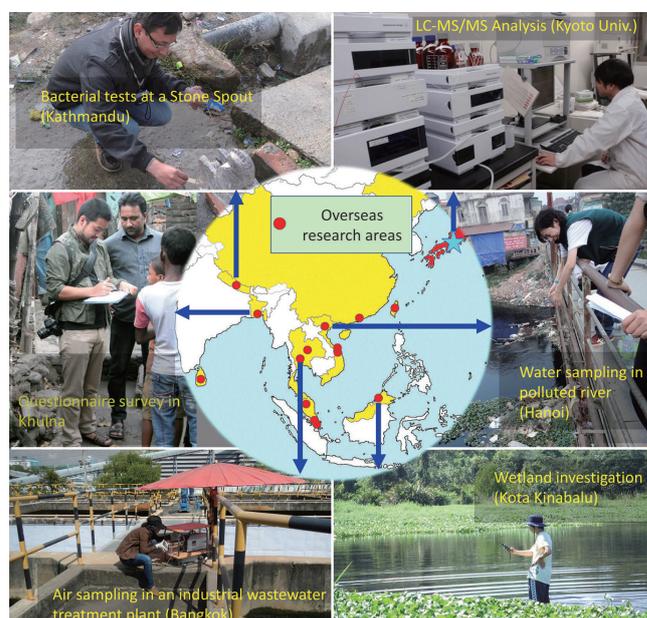
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Japan overcame severe problems with environmental pollution in the 1960s and 70s and became one of the world's most environmentally advanced countries. During this process, Japan accumulated vast amounts of knowledge, skills and experience in the practical 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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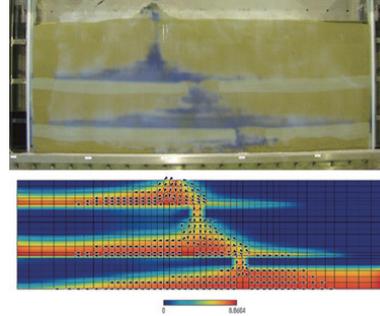
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The Environmental Infrastructure Engineering group deals with construction and management of sustainable and environmentally-friendly infrastructures, and mainly focuses on the preservation and restoration of the geo-environment. With particular attention to the promotion of a recycling-based society, we make emphasis on the study of: 1) strategies and technologies for the appropriate reuse and disposal of waste materials, including contaminated soils, excavated rocks, and disaster debris, 2) the design, management, and post-closure applications of coastal and inland waste disposal landfill sites, with a particular interest on the performance of liner and cover systems and, 3) the development and assessment of remediation techniques for ground contamination, mainly focused on the behavior of heavy metals and non-aqueous phase liquids (NAPLs) in soils. We perform both practical (on a laboratory setting) as well as theoretical work (using numerical models), and closely collaborate with national and private institutions that are responsible for the preservation of the geo-environment.

As members of a society that aims for a sustainable development, we hope that our work will help improve the frameworks and technologies that will allow us to safeguard the infrastructure and social systems for future generations, even under the straining effects of climate change.



Spread of a Non-Aqueous Phase Liquid in the ground



Site investigation at a waste landfill site

# Global Environmental Architecture

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The research explores “sustainable human environment in modern societies” based on local culture and natural settings. Learning from sustainable urban and rural settings, seeks to understand the global environmental order in all forms. The findings and experiences are realized into planning and design, and implementation of practical applications for societies.

## Locally-based building technology

We create the environmental / social design for practical applications in order to restructure / sustain the living environment in modern contexts.



Architectural project aiming at achieving environmental harmony



Reconstruction management of vernacular architecture and

## Locally-based human settlement

We explore the knowledge and methods for preferred human environment by the field surveys in eco-friendly rural villages and old historic quarters.



Field surveys of living environments in urban and rural areas



Field surveys of environmental adaptation in disaster-prone areas

# Biodiversity Conservation

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Stable global environment is based on ecosystem that comprises a large number of biological species, abiotic environment and their complicated mutual interaction. Among them, biodiversity conservation is one of the essential points to keep the environment. "Biodiversity" denotes variation at

the species level, the genetic level and the ecosystem level. We are interested in biodiversity of plant and animal species and contribute into training personnel who work to promote the conservation in domestic and/or international organizations and administrations.



Field research work in Kazakhstan



Project of ex-situ conservation of an endangered plants conducted at Takahama, Fukui Prefecture (Photo: "Foster parents" at primary school)

# 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.

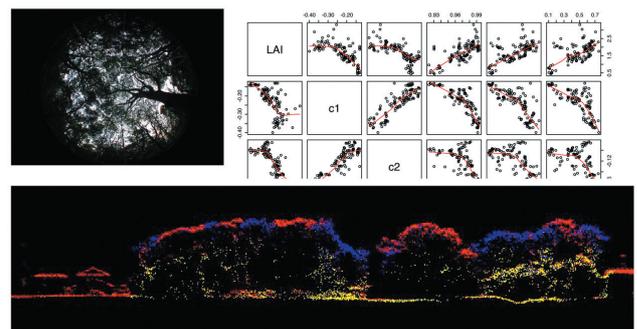
The scope of our research covers a variety of areas, ranging from small gardens and urban parks to rural and mountain areas, and also includes regions undergoing desertification. We deal with the landscape ecology of both heavily populated areas as well as relatively unpopulated natural areas in order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

# Environmentally-Friendly Energy Conversion

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Our society faces many environmental and energy resource problems. Effective utilization of energy resources is the most feasible method to solve these problems. In this laboratory we conduct the fundamental research on electrochemical energy conversion devices such as fuel cells and rechargeable batteries. In particular we focus on the "interface" at which the electrochemical reactions proceed and investigate fundamental concepts for enhancing the rate and reversibility of the interfacial reaction. The main themes of our laboratory research are 1), 2), and 3) as shown below.

## 1) Lithium-ion batteries

Fundamental research on the "electrode/electrolyte interface" and "ion transfer in electrodes" to elicit performance of lithium-ion batteries.

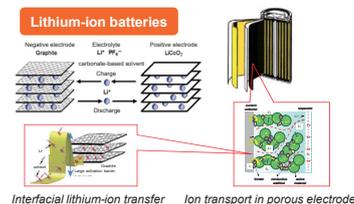
## 2) Post lithium-ion batteries

Fundamental research and material search of magnesium metal secondary batteries, sodium-ion batteries, and aqueous lithium-ion batteries as next-generation rechargeable batteries beyond lithium-ion batteries.

## 3) Fuel cells and metal-air rechargeable batteries

Fundamental research and material search of anion exchange membrane fuel cells and zinc-air secondary batteries. In anion exchange membrane fuel cells, the reduction reaction oxygen supplied from air is used as the positive electrode reaction and

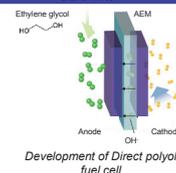
the oxidation reaction of polyol is used as the negative electrode reaction. In zinc-air secondary batteries, the reduction and evolution reaction oxygen supplied from air is used as the positive electrode reaction and the dissolution and deposition reaction of zinc metal is used as the negative electrode reaction.



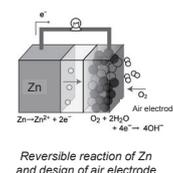
## Post lithium-ion batteries



## Anion exchange membrane fuel cell



## zinc-air secondary batteries



# 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 / Urban Infrastructure Engineering / Atmospheric Chemistry /  
Terrestrial Microbiology and Systematics / Terrestrial Ecosystems Management / Integrated Environmental Studies /  
Ecosystem linkages and Human society

## Regional Planning

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Our laboratory explores well-balanced regional developments among urban and rural areas through an appropriate evaluation and utilization of natural and social resources and tackles potential issues associated with implementation of regional planning by GIS/RS and field survey. Current topics are follows:

### ■ Understanding of Regional Environments by GIS/RS

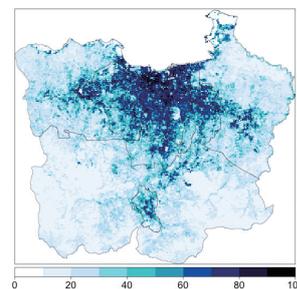
For the implementation of appropriate regional planning for managing environments, land use/cover is monitored and modelled by GIS/RS:

Monitoring of urban expansion (Indonesia); Evaluation of resilience for climate changes (India); Spatial accuracy analysis of land cover classification; Spatial data mining of local statistical data.

### ■ Exploring sustainable developments based on field work.

Natural or social resource issues associated with the management of regional environments are explored by field work or questionnaire survey:

Rural revitalization by transdisciplinary approach (Rural areas in Japan); Land use analysis and forest resource management (Vietnam); Rural development for sustainable development (Indonesia, Philippines, India, and etc.).



Urban monitoring in Jakarta Metropolitan area in Indonesia



Regional resource management working with local people (Winter flooding paddy field)

# Urban Infrastructure Engineering

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Practices to reduce environmental impact in addition to safety and security technologies are necessary to sustain sustainable human activities as a lifeline. It is important to develop "Holistic Engineering" integrating Design, Construction, Operation and Maintenance technologies. In order to achieve such a task, the laboratory aims to develop green technologies in conjunction with existing advanced technologies to secure urban infrastructures in terms of disaster-free and long life.

## Transport and Energy Infrastructures

- Application of High Performance Materials to Bridge Structures
- NDE, Monitoring, Structural Integrity Evaluation and Life Prediction of Aging Steel Structures
- Development of Floating SUPG

## Water and Disaster Prevention Infrastructures

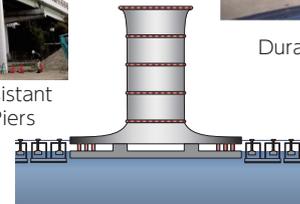
- Development of Accurate and Universal Movable Bed Model
- Multi Agent Model for Evacuation Planning
- Development of Flood Risk/Largest-Class Flood Disaster Estimation Method



Earthquake-Resistant Steel Bridge Piers



Durable FRP Bridges



Floating SUPG



Sediment Transport Simulation



Risk Assessment on Water-related Disaster

# Atmospheric Chemistry

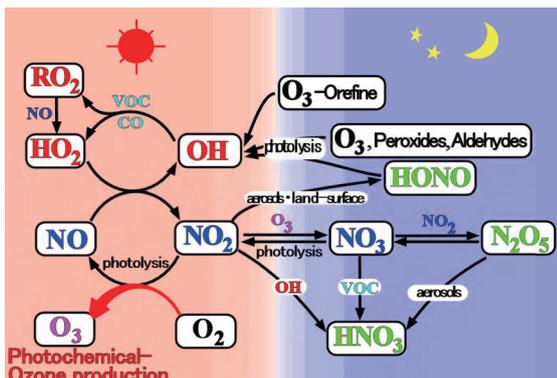
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We investigate atmospheric chemistry, mainly focusing on the issue of photochemical ozone formation. Despite the apparent downward trends for both NO<sub>x</sub> and VOCs (precursors of photochemical oxidants) detected in mega-cities in many advanced 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 HO<sub>x</sub> radicals and NO<sub>x</sub> 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



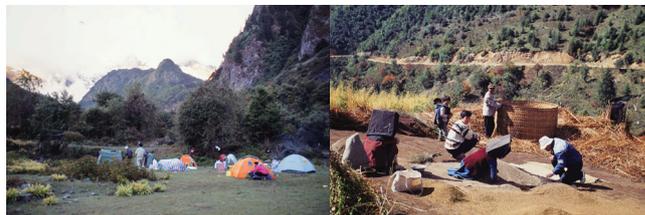
Research activities

# Terrestrial Microbiology and Systematics

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Many microbes live in agricultural and forest ecosystems, and are interacting with plants and other organisms. Some of these microbes are parasitic to the plants bringing severe damages to the hosts, and some other microbes are mutualistic bringing benefits to the hosts. We are studying on these microbes and the nature of interactions between the microbes and their biotic and abiotic environments to develop new approaches for plant protection and its health. Our current interests are:

- Fungal systematics.
- Studies on physiology and ecology of plant pathogens and symbionts.
- Molecular analyses of the fungal specific characters in parasitism and symbiosis (hyphal development, spore morphogenesis, colonization and penetration on/to solid substrates).



Field research on mycoflora and plant diseases in Yunnan Province, P. R. China.



An exotic fungal symbiont (*Amanita muscaria*) in New Zealand and its mycorrhiza with an endemic beech tree (*Fuscospora solandri*).

# 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)

# Integrated Environmental Studies

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This laboratory which consists of Dean and young teachers was launched to promote interdisciplinary and integrative research activities of environmental studies.

Our recent researches aim to propose appropriate solutions on revitalization or conservation of human-made landscapes through integrated environmental studies. In the case of biodiversity conservation, we have proposed "Local Environmental Icons" as a short-term target, and a tool of recognizing effects of local activities on local biodiversity. These icons are considered having an affinity for livelihood or contents of conservation activities. We emphasize stakeholders who change their action by observing icons as well as icons to be changed by their conservation activities. To find icons we are required to integrate local knowledge and scientific knowledge of various fields and to drive adaptively with stakeholders.



Field tour of paddy biotope (Koka City, Shiga Prefecture)

# Ecosystem linkages and Human society

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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

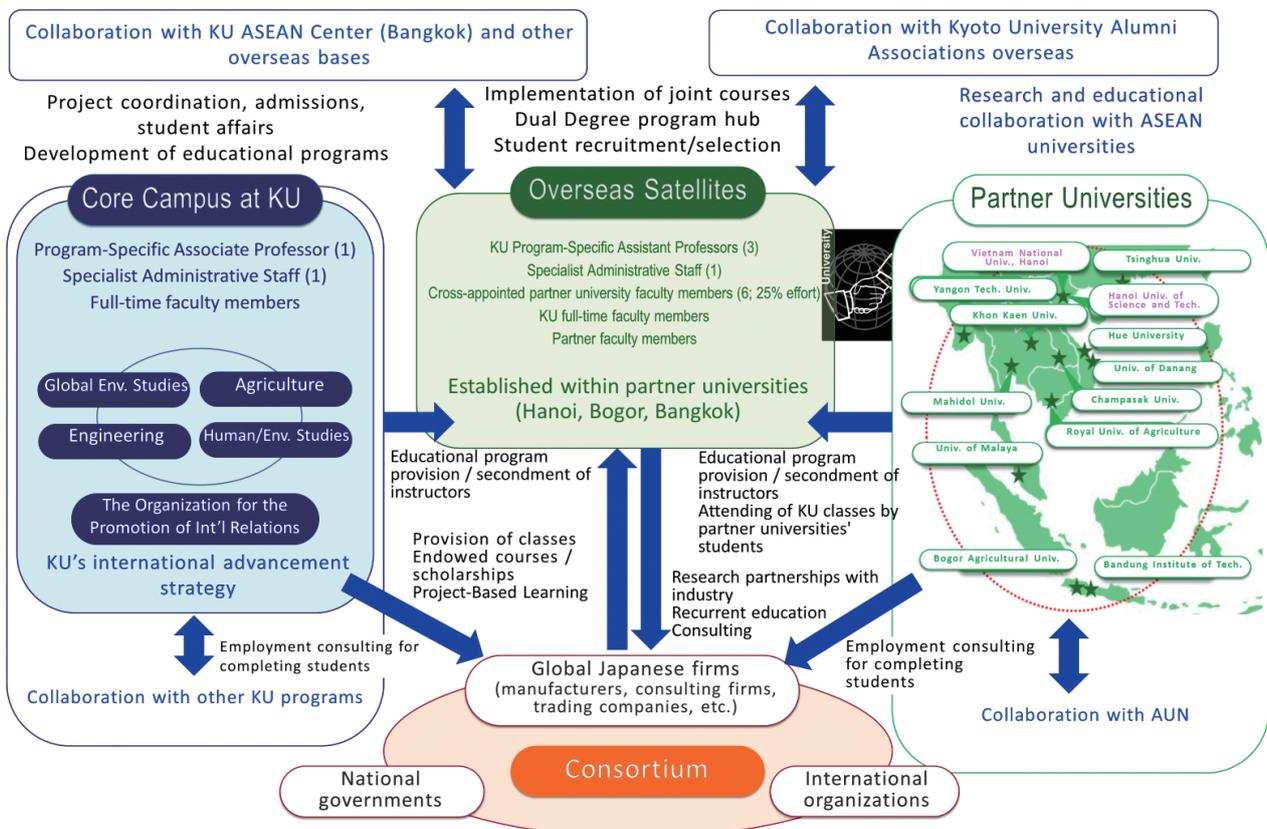
# Environmental Innovator Program EIP – Cultivating Environmental Leaders across ASEAN Region –

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Rapid economic growth in the ASEAN region has created serious environmental and social problems, ranging from water degradation and improper waste management, to traffic congestion and deforestation.

The *Environmental Innovator Program – Cultivating Environmental Leaders across ASEAN Region* is a new program at GSGES, which strengthens research and educational capacity through intensive intellectual exchanges with 11 partner universities in ASEAN region. It aims to cultivate environmental innovators who will take on leadership roles with a deep understanding of Asian cultures and advanced communication skills to tackle global environmental challenges.

One of the major components of this program are two newly launched double-degree programs with Mahidol University (Thailand) and Bogor Agricultural University (Indonesia). Students enrolled in these programs will research Global Environmental Studies at GSGES (earning a master's degree in Global Environmental Studies) with a multi-disciplinary perspective, and will also study a specific discipline at a partner university, such as environmental engineering or agriculture, for their second master's degree. The EIP program provides a unique opportunity to study not only a specific discipline but also multi-disciplinary environmental studies at the same time.



# JGP Top Global University Project “Japan Gateway: Kyoto University Top Global Program” Environmental Studies

A program, “Japan Gateway: Kyoto University Top Global Program, JGP in short”) has been organizing to conduct international joint education and double degrees with world-class partner universities prominent in research areas such as Mathematics and Chemistry that Kyoto University has significantly international competitiveness. In the area of environmental studies, Graduate School of Global Environmental Studies of Kyoto University plays a central part to prepare the way to implement interdisciplinary and practical researches to conduce towards the environmental problems, both in global and local scales. To fulfill this goal, Graduate School of Global Environmental Studies is collaborating with Graduate School of Agriculture of Kyoto University to facilitate an international joint education and double degree program. Through the global education and research work, the program is set out to encourage young researchers to obtain skills and knowledge in environmental studies so that they can be able to work on the world stage in near future.

## 1) International double degree program

The program has been conducting a double degree program with Gadjah Mada University, Bogor Agricultural University (Indonesia), Kasetsart University, Mahidol University (Thailand), and Tsinghua University (China) so far. A double master degree program with Lille University (France) etc. are planned to be implemented in the future.

## 2) International joint education program

The program provides various international education programs. A short study abroad program, named “International Spring School / Autumn School for Environmental Studies” aimed to understand the environment in Japan and learn the skills and knowledge of analysis through the field work, laboratory work and lectures was carried out for 5 years. In total 70 selected students (applicants: 222) from various universities in the world have joined and learned environmental studies under the multicultural atmosphere of Kyoto since 2016. In addition, JGP has providing opportunities for internships and research program in overseas universities for students, and receiving students from partners’ universities to conduct international collaborative research. In this way, our program promote/foster internationalization, and develop environmental studies with interdisciplinary researches in multi-culture condition.

## 3) International research and study abroad fair

The program is also joining events on “Study Abroad Fair” and “International Symposium in Environmental Studies” in various countries in the world, i.e. Vietnam, Thailand, Tanzania etc., to promote international collaborative education and research. In addition, international collaborative studies/field work/researches have been conducted in various places.

### <Images of JGP activities>

**Spring School 2016**

Water fowl observation @ Lake Biwa

Field monitoring Atmospheric Chemistry

Orientation @ GSGES

Learning waste water treatment system

Lecture @ Lake Biwa Museum

On-board training @ Maizuru Research station

Lecture @ Aso Volcano Museum

Soil observation in Lab. visit

Geothermal power plant

Casual presentation @ hotel

Fuji-ori experience in Kamiseya

Chemical experiment in Lab. visit

Group photo @ clock tower

Lecture @ Kyushu Okinawa Agricultural Research Center

**Partner Universities in Oversea**

Researcher Joint degree  
exchange program

Collaboration in Education **Environmental Studies** Collaboration in Research

Student exchange Lecturer exchange Double degree program

Graduate School of Global Environmental Studies Graduate School of Agriculture

**Kyoto University**

<p><b>American Universities</b></p> <ul style="list-style-type: none"> <li>- University of California, San Diego (U.S.A.)</li> </ul> <p><b>African Universities</b></p> <ul style="list-style-type: none"> <li>- Sokoine University of Agriculture (Tanzania)</li> <li>- Lilongwe University of Agriculture &amp; Natural Resources</li> </ul> <p><b>European Universities</b></p> <ul style="list-style-type: none"> <li>- KU Leuven (Belgium)</li> <li>- Universite de Bretagne Occidentale (France)</li> <li>- Universite de Lille 1 (France)</li> <li>- Universite de Lorraine (France)</li> <li>- University of Caen Normandy (France)</li> <li>- University of Stirling (Scotland)</li> <li>- University College Cork (Ireland)</li> <li>- University of Naples Federico II (Italy)</li> <li>- University of Modena and Reggio Emilia (Italy)</li> <li>- Politecnico Di Torino (Italy)</li> </ul> <p><b>Oceanian Universities</b></p> <ul style="list-style-type: none"> <li>- University of the South Pacific (Fiji)</li> <li>- Macquarie University (Australia)</li> </ul> <p style="font-size: small;">(Updated on November 30<sup>th</sup> 2018)</p>	<p><b>Asian Universities</b></p> <ul style="list-style-type: none"> <li>- Royal University of Agriculture (Cambodia)</li> <li>- Tsinghua University at Shenzhen (China)</li> <li>- Banaras Hindu University (India)</li> <li>- Indonesia University (Indonesia)</li> <li>- Bogor Agricultural University, IPB (Indonesia)</li> <li>- Institut Teknologi Bandung (Indonesia)</li> <li>- Gadjah Mada University (Indonesia)</li> <li>- Brajajaya University (Indonesia)</li> <li>- Kazakh National Agrarian University (Kazakhstan)</li> <li>- Champasak University (Laos)</li> <li>- National University of Laos (Laos)</li> <li>- Malaya University (Malaysia)</li> <li>- Yezin Agricultural University (Myanmar)</li> <li>- National Taiwan University (Taiwan)</li> <li>- Chiang Mai University (Thailand)</li> <li>- Kasetsart University (Thailand)</li> <li>- Khon Kean University (Thailand)</li> <li>- Mahidol University (Thailand)</li> <li>- Ha Noi University of Science and Technology (Vietnam)</li> <li>- Hue University (Vietnam)</li> <li>- The University of Da Nang (Vietnam)</li> </ul>
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Satoriyama observation in Kamiseya

Lab. experiment in Atmospheric Chemistry

Field study in Kabata, Shiga

DNA extraction in Marine Biology

Discussion in final seminar

Tea-ceremony experience in Kyoto

Atomic energy seminar

Field study in Forest Wakayama

Learning local confectionary company's challenges

Awarding ceremony of this program

**Spring School 2017**

# Introducing the Faculty

## Project for the Reconstruction of Vernacular Architecture and Its Significance for Contemporary Society

Professor **KOBAYASHI Hirohide**  
Environmental Design, Regional Architecture



### Vernacular Architecture in Modern Society

Even in remote villages, the spread of the market economy and accompanying shifts in values have already become part of daily life, and the local culture and customs unique to a region are gradually dying out. In particular, vernacular architecture—the highly indigenous traditional housing cultivated by the natural features of a region—is quickly being replaced with buildings incorporating large amounts of new materials such as concrete blocks, galvanized iron sheets, and cement slates. Field surveys that have been conducted so far across Asia, the South Pacific, and West Africa also reveal that in many cases residents have not been constructing their own traditional buildings since the 1970s and 1980s. For such architectural techniques to be passed down through the generations, there needs to be collaborative efforts among the local community to construct housing without outside help. There is, therefore, a risk that such techniques of vernacular architecture will be lost as highly skilled community residents grow older without the opportunity to transfer their knowledge with the next generation. Moreover, given that architectural spaces reflect not only architectural techniques, but also the daily lifestyles of the village community and its cohabitation with nature, the loss of vernacular architecture will also have an impact on the potential of many traditional customs and rites to be kept alive into the following generations. The diverse abundance of vernacular architecture is gradually slipping away and will be difficult to revive once it is lost completely.

Conducting surveys in the villages and listening to what individuals have to say, we find that many are conscious of the necessity and importance of traditional housing. However, a number of factors hinder the construction of such housing, such as restrictions on the use of resources due to forest conservation policies, the decline in useful resources around villages, reluctance to provide construction labor resources in financially struggling village communities, or strong preferences for modern housing using new building materials. At the same time, when my survey research brings me to a central figure in the village community who is concerned about this situation—and when we engage in repeated

discussions—this concern comes together as a consensus among the local people, and it is possible to establish a project for reconstructing vernacular architecture. So far, we have cooperated with and supported initiatives in Vietnam (2008 and 2018), Fiji (2011), Thailand (2013), and Vanuatu (2017), tackling various hurdles along the way.

### Sustainability of Vernacular Architecture

Based on my experience with reconstruction projects, it is possible to summarize the factors that contribute to the construction and maintenance of vernacular architecture into three elements: local materials, traditional techniques, and collaborative labor. These elements are mutually linked in the sense that knowledge and techniques are passed down through interaction between the generations in the village communities, and such skills are adopted to use forest resources effectively and rationally, allowing the village community to enjoy the substantial gifts of the forest. Moreover, looking at each element as a regional resource, local materials are part of the local natural environment (physical resources), traditional techniques are part of the local culture (intellectual resources), and community cooperation is part of the local society (human resources), such that as a whole such architecture is a product of the local environment itself. This demonstrates how the creation and sustainability of vernacular architecture relies on the preservation of the regional environment. Investigating vernacular architecture means investigating not only buildings, but also communities, natural environments, and even the culture of the area. The distinctive character of such vernacular architecture can be seen as not so much the antiquated product of a bygone era, but as an essential element for creating balanced regional environments in the future from the point of view of regional identity and coexistence with nature in our extremely globalized modern society. In that sense, projects to reconstruct vernacular architecture provide significant insights into not only the community residents in and around the project, but also our daily lives and housing in the modern day.

# Striving for Sustainable Development Utilizing Regional Resources

Professor SAIZEN Izuru  
Regional Planning



## Farming villages weakened in the process of economic development

I engage in research on the development of regional areas and farming villages inside and outside of Japan with a central focus on field surveys and analysis using geographic information systems. In Japan, the depopulation and aging population of farming villages has been a clear issue for several decades. Given the extremely severe and complex background, it is still difficult to find an effective solution. No doubt very few people during Japan's period of high economic growth predicted that rural communities would lose their vitality. Efforts should probably have been made at the time to devise measures in preparation for the future. Meanwhile, in many of the agricultural villages in the developing countries of Southeast Asia, the benefits of the economic development of the country as a whole have seen improvements in living standards and levels of happiness, as reflected by the contented smiles on many children's faces. However, such rapid development is also in some ways vividly reminiscent of Japan's high economic growth, and we therefore need to carefully consider initiatives toward the future. As the economy develops, the concept of a monetary economy begins to encroach on agricultural communities as well. While livelihood in the farming villages in such countries was typically based on a system of self-sufficiency, farmers begin to use the fields, in which they previously used for cultivating food for themselves, for growing cash crops and eventually begin to intensively farm a certain crop in order to increase their profits. While this raises the potential for making monetary profit, it also increases their vulnerability to changes in the market value of the crop and to natural disasters. Some may wreak catastrophic and irreparable damages

in just a short period of time. And as the populations in farming villages increase, demand arises for new industry. However, as in many developing countries, urban industry is driving the economy so that the rising population lies increasing deindustrialization of the farming villages.

## Revisiting what is always there

One method of ensuring sustainable economic development in such regions is to effectively utilize the local resources available in an area. "Regional resources" refers to those resources that have been cultivated throughout the long history of the region, which are highly compatible with the natural environment and climate of that area, and which have supported the lifestyles of the local residents over the years. However, there are many regional resources that are gradually being lost in the shadow of economic development. These include, for example, festivals unique to a certain community, traditional crop cultivation, and slash-and-burn agriculture. These traditions and practices each have the potential to contribute to the community in the form of ecological tourism, securing crops for self-sufficiency, or the sustainable use of forests. By reconsidering regional resources, it is possible to boost the underlying vitality of an area. Developing countries are also entitled to enjoy economic progress and prosperity. At the same time, it is essential to ensure that they pursue suitable and sustainable development in line with the stages of development. I aim to develop achievable measures through discussions with local people.

# Introducing the Faculty

## Clarifying the connections among human health, environment, and society

Associate Professor UEDA Kayo  
Environmental Health Sciences



We have been experiencing a transition of environmental health risks over the past half-century. In the past time, the main concerns were whether the high level of industrial pollutants from the local source may have caused diseases or exacerbated pre-existing ill conditions in a short time period, which made people infer the association between its association. Currently, we are aware that these environmental health risks should be addressed in a global scale, as represented by heat-related mortality under climate change and respiratory/cardiometabolic diseases morbidity attributable to transboundary air pollutants. The emerging environmental health problems also include the health effects of low levels of chemicals on allergic diseases, concerns of health effects of maternal exposure to environmental pollutants on fetal and neonatal development. Further, various individual- or community-level factors, such as socioeconomic status and medical progress, modify the health effects of environmental pollutants.

Our laboratory tries to disentangle the health effects of environmental pollutants using epidemiological and experimental approaches. Of those, I have been involved with epidemiological studies which focus the distribution and determinant of health and diseases in "population" while experimental approaches use cells, animals, and sometimes human to elucidate health effects of environmental pollutants and underlying mechanisms.

One of my specific research goals is to identify who are more at risk from environmental pollutants. We can consider susceptible populations who are likely to have more serious responses to a certain level of exposure to pollutants, and vulnerable populations who are likely to be exposed to higher levels of environmental pollutants more often than others. Susceptibility is generally related

to physiological variation. For example, it is considered that children are more susceptible than adult because they are still under the development and the defense system is immature. Vulnerability is related to people's behavior and social factors. In the study examining the association of hot temperature and heat-related illnesses in Japan, we focused on age as a factor that could modify the effect of temperature on health. The age-stratified analysis revealed that the middle-aged males had higher risks of heat-related illnesses than other age groups. This was an unexpected finding because we hypothesized the elderly, with deteriorated physiological function due to aging process, was more susceptible to exposure to high temperature during summer. From this observation, it is speculated that the middle-aged people tend to work outdoor longer hours than the elderly while the elderly stay indoors where air conditioning is available and avoid going outside. Especially, Japanese people have been more aware of heat-related illnesses from preventing heatstroke campaigns focusing on the elderly after the hot summer in 2010. This result is just a piece of evidence that indirectly suggest how much individual behavior and social status modify environmental health risks. But this gives us an insight about the connections among individual, society, and environment.

# Conveying the Significance and Safety of Using Recycled Water in Agriculture

Associate Professor YOSHINO Akira  
Agricultural Economics

Master's students at the School of Global Environmental Studies take part in a long-term internship lasting at least three months as a compulsory part of the curriculum. Over the three years since 2015, each year one student from the field of Environmental Marketing Management has pursued his or her internship by participating in an initiative in Itoman City in Okinawa to investigate the potential use of recycled water in farming.

The recycled water has been developed through efforts led by Professor Hiroaki Tanaka's laboratory at the Kyoto University Graduate School of Engineering. By applying ultrafiltration and UV disinfection to treated waste water, they have created a low-cost supply of safe water suitable for direct use—even to irrigate crops of vegetables sold for raw consumption. In Itoman City in Okinawa, where use of the recycled water is being tested, there are high hopes for its use due to the chronic water shortage that farming in the area has suffered over the years. This approach is also environmentally-friendly as it reduces the amount of treated waste water released into rivers.

Yet, regardless of how safe the water may be, the local government heading up the project and farmers were concerned about the possibility that consumers could be reluctant to purchase vegetables grown with recycled water, given that such water comes from sewage. This is why they reached out to our laboratory. Risk communication for food products has been one of the focuses of our research since the scandal that arose surrounding BSE—or mad cow disease, as it is commonly known.

In order to be able to communicate risk to consumers and the general public it is necessary to start by listening openly to people's interpretations and concerns regarding the message put out by those developing the products. Chiharu Miwa—the first student to pursue her internship at this project in Okinawa—drew on the knowledge of chemistry that she had acquired as an undergraduate to create a pamphlet and website explaining the significance and safety of recycled water, while also carrying out a survey to listen to what consumers had to say. The results revealed that the majority of consumers were not completely against the idea but had a vague feeling of concern. Such concern focused on the possibility of toxic chemicals that may have been overlooked and the risk of unanticipated accidents, rather than the risk of food poisoning. This result came as a shock to those involved in the development of the water, as they had taken great

pains to ensure that E. coli bacteria and viruses had been eradicated.

Serika Yuto, the student who went to Okinawa the following academic year, took part in a test run selling vegetables grown using recycled water with the cooperation of farmers, and created and starred in a video explaining recycled water. Alongside these activities, she conducted a survey and skillfully applied advanced statistical analysis to the results in order to estimate to what extent the actual sale of vegetables cultivated in Okinawa Prefecture would be affected if recycled water was used in cultivation. This revealed that as long as explanations regarding recycled water are provided, the impact on vegetable sales is not significant enough to merit concern.

This, however, left the question of how to ensure that the message gets across. The third student to participate in the internship, Minori Oda, who specialized in education as an undergraduate, set out to tackle this question. In addition to publishing articles in the local newsletter, she also set up a recycled water tank and hydroponics kit in the lobby of the Itoman City Hall, testing out ways of encouraging people to want to find out more regarding recycled water. Displaying such items was highly effective, with just under 90% of local people becoming aware of the existence of recycled water, and just under 40% being drawn to the explanation on recycled water.

As a result of such survey and research activities, the recycled water project in Itoman City is being developed for commercial purposes. As our role draws to an end, it seems fair to suggest this internship and other such opportunities are distinctive of the School of Global Environmental Studies in the way that they allow students from various backgrounds across both the sciences and humanities to cooperate with and learn from researchers from other fields as well as government and industry representatives, and to draw on their own knowledge and ability in their respective specialist fields to contribute to a certain project and, in doing so, pursue their own research.



# Introducing the Laboratories

## Research Laboratory Profile: Biodiversity Conservation, Department of Technology and Ecology

### —What kind of research do you do?

The research area that Professor SETOGUCHI and Assistant Professor SAKAGUCHI are focusing on is the evolutionary biology of plants, based on plant systematics and phytogeography. In the past, we used to spend more than a third of the year conducting studies overseas, but recently, our research has become more Japan-centered. Japan stretches a long distance from north to south and has diverse environments, ranging from subpolar to subtropical zones. We hope to find interesting phenomena that are unique to the characteristics of the Japanese archipelago and explore how plants adapt themselves to such environments for evolution and survival. Associate Professor NISHIKAWA is doing very similar research into fauna, as opposed to flora. The fields in which he conducts his research center on East Asia, including Japan, and Southeast Asia.

A large percentage of the plants and animals we study are rich in diversity. We have conducted various activities such as conservation, collection and propagation for each animal and plant that we encounter in the course of our research, but, ultimately, somewhere along the way, we have realized that conservation has come to take up a full half of our work.



### —What is unique about your laboratory?

When we joined the Hall of Global Environmental Research, we thought about what our defining characteristics were. Because we were working in biological diversity, diversity and evolutionary, and diversity conservation studies, “diversity” became our keyword.

Also, given our responsibilities in liberal arts courses, we try as much as possible to have each of our lecturers cover a broad range of areas. If we were to establish one single course like other faculties, we would all be covering the same field. Although the orientation of our research is heading in the same direction, in our biodiversity classes, our lecturers are also diverse, which we see as one of the distinctive characteristics of our laboratory.

### —Tell us about the research your graduate students are doing.

Many of students seem to be more interested in evolution rather than conservation. Having said that, although they may be most interested in evolution when they first start their research, as they participate in conservation-related events, spend time in the laboratory, and become associate with the locals, some students become more aware of conservation and eventually end up involved in conservation to a certain extent, even as they continue to pursue evolutionary studies and biodiversity sciences. We do hope that the students in our laboratory will become more involved in conservation through such opportunities.

### —What kind of areas do students move on to after they graduate from your laboratory?

Of those students who have completed their doctorates, most have found jobs at universities. Some graduates have joined consulting companies and others have started their own businesses, taking advantage of their research experience. Some postgraduate students want to set up their own companies, so we hope to see more students who will experience that kind of research a little more and work actively in society in that way.

In terms of conservation and the like, involvement with public administrations will take on increasing importance going forward. In particular, we hope to deepen the connections on the cultural front. We would like to see our graduates move into a greater variety of workplaces after they have gained research experience, such as teaching, public service, or in ordinary private-sector business. Ultimately, that will be the quickest way when it comes to conservation of biodiversity. More flexibility in various respects is what we are aiming for.

(Interviewer: FUKAMACHI Katsue)

## Department of Global Ecology Sustainable Rural Development

### —How would you describe your laboratory?

Our Laboratory was originally launched as the Agricultural Land Use Planning in the Faculty of Agriculture. The name was later changed to the Laboratory of Rural Planning, and in 2011, we joined the Hall of Global Environmental Research and became the Laboratory of Sustainable Rural Development. There is an academic society called the Association of Rural Planning, and we have been involved in this field ever since it was established. In simple terms, rural planning is the study of problem-solving for rural communities. Basically, we start with problem-solving in the regions, making use of various concepts, theories, and approaches to come up with concrete plans and proposals. We develop planning theories, methods, schemes and the like, but we do not attempt to complete them all by ourselves. Instead, we adopt a more pragmatic approach, in which we will insatiably try anything that we think might be useful for problem solving. Out in the field, there are not only problems, but hints for solving them lying in wait for us to find them, so naturally, we place major importance on learning from the field.

Our laboratory works on a variety of issues, not only in Japan, but overseas as well. We endeavor to generate concrete solutions, but the harder we try, or the more we want to make a proposal that suits that particular area, the more we find that each area has its own peculiarities and systems vary substantially from country to country. An interdisciplinary approach has been adopted in the study of rural planning since its early stages, but research themes have tended to focus on the challenges of rural communities in Japan. For this reason, the field had fallen considerably behind in an international sense. In that respect, we believe our laboratory has an advantage.

### —What kind of things do you research?

Our fieldwork centers on the areas around Kansai, but we do go to a variety of places. The kinds of themes we engage in include, for example, research into the development of community planning methodologies and the restructuring of local organizations. We regularly visit regional areas and assist with the development of plans and make proposals regarding schemes on an ongoing basis. We select various regions to suit each theme, such as rural community planning in Kobe City, tourism in Miyama-cho, and digitization in farming



communities in Kameoka. Going forward, we hope to prioritize themes such as the development of regional models related to rural planning and basic research regarding workshops.

### —How is your laboratory run?

The laboratory has a total of 29 members, including one professor, two associate professors, one assistant professor, and three researchers, from Indonesia, Bangladesh, and Japan. We also have 13 Master's students including students from Bangladesh, Indonesia, China, Taiwan, and South Korea. Because there are so many international students, our research themes are very diverse.

### —What kind of research are the researchers and students conducting?

Our researchers are conducting research into future forecasting models in the areas of Marchais (street markets), agriculture-welfare collaboration, and disaster prevention. The students' research themes include improvement of disaster prevention resilience in local communities in metropolitan areas, the development of inbound tourism that takes the co-existence of multiple cultures into account, and workshops using 3D models. In particular, we are seeing rapid advancements in digitization in rural areas at the moment, such as what we call smart agriculture and is known as smart villages overseas, with ICT technologies rapidly spreading in farming communities. Seeing this as an opportunity, we are seeking to find solutions to the various problems that rural communities are currently facing, such as depopulation and the shortage of people willing to take over farming from aging farmers.

(Interviewer: FUKAMACHI Katsue)



# 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 structure

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 study

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).

### 5 Double Master's Degree Program

This program seeks to train/foster specialists who will have in-depth knowledge of global and regional environments and the practical skills necessary to solve environmental problems, and who are instilled with an international perspective. Students who successfully complete approved course work overseas at the partner university will gain transfer credit and earn two master's degrees in two different fields for three years.

Partner universities:

Mahidol University, Thailand (Environmental and Water Resources Engineering, Faculty of Engineering)

Bogor Agricultural University, Indonesia (Master Program in Regional Planning and Master Program in Landscape Architecture)

Graduate School at Shenzhen, Tsinghua University, China

## 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 structure

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 study

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.

# GSGES Course Tree

## Graduate School of Global Environmental Studies (Environmental Management, Global Environmental Studies)

### Goal

Secure the current and future health and sustainability of the global environment by fostering (1) practitioners with an ability to improve, sustain, and manage the environment, (2) researchers who establish sustainability as the basis of an integrated, interdisciplinary field, and (3) Internationally effective professionals who address the environmental challenges confronting the 21<sup>st</sup> century.

Cultivate professional practitioners and researchers who pursue field-based research with a sincere commitment to contribute to the environment and environmental sustainability.



### Admission



### Admission

### Prospective Students

We seek a diverse body of students with different backgrounds and perspectives:  
 Future researchers from all academic fields with a keen interest in global environmental problems and their solutions and future and current practitioners with a passionate enthusiasm for environmental management and a sincere commitment to acquiring and implementing knowledge and practical skills.

# Voices from Students

## VOICE 1

**JONOKUCHI Suguru**  
Master's Program, Environmental Infrastructure Engineering

When I entered the Graduate School of Global Environmental Studies, I had two major expectations. The first was to study alongside people from a variety of backgrounds and nationalities. The second was to learn about global environmental issues in a way that transcended my own specialization, such as engineering, agriculture, and economics. These days, I feel that I am meeting these expectations every day. On the first point, I spent three months doing an internship at the University of California San Diego, researching my specialist field of ground environmental studies. I spent my days there on repeated trial-and-error approaches to my research, while debating with locals of different backgrounds. This was an invaluable experience that gave me insight into my own strengths and weaknesses. However, I believe that the appeal of the Graduate School of Global Environmental Studies does not just lie in its formal programs, such as these kinds of internship programs, the English-language course delivery, and the fieldwork opportunities. Rather, I feel that it is the people to be found in the School who are its greatest appeal. As my second expectation shows, the Graduate School of Global Environmental Studies is brimming with unique people of truly diverse nationalities, cultural backgrounds, and experiences.

About half of the School's students are international students of different nationalities and cultural backgrounds. Moreover, the people in the School possess a broad range of knowledge that transcends the boundaries of the sciences and the humanities. There are way too many examples to list, such as the person who loves amphibians and will tell you anything you want to know about them, and the person who has been engaging seriously in renewable energy since their student days. Being able to spend every day with these kinds of people, all of whom respect each other, is extremely stimulating. For this reason, I believe that the Graduate School of Global Environmental Studies is the ideal place to aspire to become the kind of "practitioner with broad perspectives and high-level knowledge to tackle many complex global environmental problems" expounded in the School's philosophy.



## VOICE 2

**Shahar Lilia GRIFFIN**  
Doctoral Program in Global Environmental Studies  
Global Environmental Policy

Studying in a different country could be quite challenging, but a well-known phrase says: "The magic happens when you step outside of your comfort zone".

When I came to know about the master program of Environmental Management in the GSGES, I knew I found the best program for me. I was attracted by the practical aspect of these studies, and the ultimate goal of the graduate school: to qualify future experts that would have positive impact on the health and sustainability of the global environment.

In the GSGES we study various courses regarding global environmental issues and sustainability in different fields: economics, engineering, and education along with other fields. Apart from studying in the classroom, we all also went out to the field, and saw in our own eyes what are we studying about. This combination of theoretical learning along with practical learning is productive, especially when dealing with environmental management. One thing I liked especially is meeting the local people when we went to the field. Hearing about the practices and rural culture of Japan was fascinating and authentic, as well as directly related to issues we have learned in class.

The professors in the GSGES are very helpful and welcome intelligent debates and personal consultations. The fact that our professors have both perspectives – the local and the global – and the fact that the fields of their research diverse greatly, gives us, the students, multiple perspectives to our own research. I think that our joint seminars and the comments I have received from the professors really improved my research.

Although studying and researching interesting topics is very fulfilling, it is very demanding as well: being a master student requires my classmates and me to study hard, spending much of our time in deepening our understanding in environmental related topics, and especially have a high self-discipline when conducting our research. In the time of our internships, we were operating independently in the field, and it was our obligation to make our best out of this experience.

Since the GSGES is quite a small graduate school compared to other Kyoto University graduate schools, there is a good sense of community, which makes it a nice place to work in. One more integral feature of the school is its international community: the students, and some of the teachers, come from different backgrounds and cultures, which makes the time together very enriching and educating. In that sense, it does not matter where you are from, since everybody contributes to the discussion of global environmental issues.

Indeed, challenges are not easy, but they always provide us benefits when overcoming them. Studying global environmental studies in a multicultural environment is looking one step ahead, as we aim to apply theoretical as well as practical solutions for the future society.



# Voices from Graduate Students



Graduated from Master's Program  
(2017)

**AOKI Tomohiro**

Community-Reactivating Cooperator  
Squad (Minabe Town Hall)

I entered the School of Global Environmental Studies with the idea of "I want to create a system that draws out the appeal of rural areas and increases their vitality!"

In the Laboratory of Sustainable Rural Development, I learned methods for community building, and at the same time I was able to directly go to local communities in Japan and abroad and experience real community-building sites where specialized know-how was being applied. In particular, through the school's internship program, I stayed in a rural area and felt firsthand the conditions in the community from the perspective of its residents. Increasing the vitality of the local community requires that "industry (companies), academia (research institutes), government (national and local governments), and the people (local residents)" come together as one and work cooperatively, and I learned that the function of "intermediaries" is vital in order to coordinate that cooperation among them.

Since graduating from the school, I have been working as a member of the Community-Reactivating Cooperator Squad of Minabe, a town located in the Hidaka District of Wakayama Prefecture, building a model for a system that is based on cooperation among each constituent of the "industry-academia-government-people" partnership and that will lead to boosting the local community's vitality. I am proactively going to the site of community activities, interacting with the people from the town hall and from the community, and as I build trust with both sides, I am starting to fulfill that "intermediary" function between "government and people." Furthermore, along with regular consultations and interaction with people from research institutes at the School of Global Environmental Studies and elsewhere, I am starting to make progress on strengthening "academia-people" cooperation by carrying out activities aimed at getting advice from the perspective of experts. Step by step, I am getting closer to my objective of creating a "system to increase the vitality of the local community."

I believe the internship system that provided a firsthand feel for the atmosphere at the site and the group discussions that permitted debates which transcended the frameworks of "field, nationality, and teacher/student" have been extremely useful in allowing me to smoothly implement these types of community activities. The School of Global Environmental Studies is appealing in as much as you have the opportunity to interact with so many enthusiastic teachers and fellow classmates from Japan and abroad, and it is possible to gain broad-based, systematic knowledge and to take on the challenge of every sort of research field in Japan and abroad, which opens up limitless possibilities for your own future.



Graduated from Master's Program  
(2009)

**MIYAZAKI Takumi**

Bank of Tokyo-Mitsubishi UFJ  
(temporarily transferred from Osaka Gas)

Since graduating from the School of Global Environmental Studies, I have been working for a gas company, handling the development of energy infrastructures such as domestic and foreign resources, as well as power plants. I have had the good fortune to have opportunities like being posted to our subsidiary in the UK and being temporarily transferred to a financial institution; and while it is hard work, I feel like I am pursuing a fulfilling career.

The two years I spent at the School of Global Environmental Studies unquestionably built my foundation. My interactions with international students at the school and the internship system that allowed me to work in a research laboratory at a British university gave me the opportunity to turn my attention to the world. Also, within the numerous unique programs, by studying hard together with my classmates who had diverse values and backgrounds, it made me realize how narrow my own perspective was. I feel that it has enabled me to persistently work to discover solutions when I have been placed in various environments.

Even now, I ask myself daily whether I am really embodying the ideals of the School of Global Environment, but the stimulation I received from my classmates as well as senior and junior fellow students who live earnestly without turning their back on their own beliefs still energizes me today. Global environmental issues are extremely difficult problems, but if you are thinking that you want to contribute to the solutions through your work, then by all means, I hope you will consider enrolling in the School of Global Environmental Studies.



Graduated from Master's Program  
(2017)

**IM SOPHANAVY**

Cambodia-Japan Cooperation Center  
Phnom Penh, Cambodia

Life in Japan, as well as in my graduate school (GSGES) provides me many new experiences, and knowledges. I am impressed by GSGES program because of sharing opportunity, field trip, and internship program.

Students are allowed to share their knowledge and understanding through group discussions, presentations, and assignments. I have learned a lot from different kinds of presentations, such as presentation in graduate school, joint laboratory, and my own laboratory. In addition, my research topic was improved by the comments of professors and participants.

I am not only provided theoretical base, but also practical based program. Field trip to Tango is memorable experience to me to collect ocean creatures and to identify their ages; in addition, I have learned how to distinguish soil types and measure tree dimensions.

Internship is another interesting activity. I could build good networks with internship hosting institution, and I learned about the reality of working with Cambodian government institution. Besides assisting administrative staff to organize seminars and workshops, I took internship opportunity to do field survey to collect data for my thesis. To collect data, I have prepared questionnaire to interview community. Internship is a good opportunity to reach targeted community and access to data for my research topic.

GSGES has provided me a good opportunity to learn, improve, and share knowledge through presentations, field trips, and an internship. I am now working as a coordinator in Cambodia-Japan Cooperation Center (CJCC) in Phnom Penh Cambodia.



Graduated from Master's Program  
(2012) and Doctoral Program (2016)

**KOBAYASHI Mai**

Researcher, Research Institute for  
Humanity and Nature

Having lived overseas for a long time, I wanted to study environmental issues in the Japanese context and under the guidance of teachers who emphasize practice. I did not want to live in Tokyo, and I looked forward to studying at a graduate school with an open environment like Sansai Gakurin (Grove of Universal Learning). During my Master's Program at the school, I spent many days struggling to improve my rusty writing skills while working on my compulsory subjects. I had many opportunities in class and through joint projects to interact with my fellow classmates, and that generated a strong sense of camaraderie. It was also a time when I had the luxury of meeting lots of people from different cultural areas and learning a great deal from each individual's awareness of issues, different perceptions, and dreams. As environmental issues become more serious with each passing year, the very fact that this is a cross-sectoral experiment with no predetermined answers to certain questions—such as what the issue is, how the threat should be understood, or how solutions should be shared—tested our communication skills as we tried to understand one another. I often had the feeling that the school's students, who came together with an eye to diversity and a sense of a need for integration, possessed a new type of imagination that was a bit different from the teachers as well, who have produced exceptional results in the context of the traditional academic framework. This urgent new field requires an appropriate, flexible imagination. I moved on to the Doctoral Program, and since graduating, I have been working as a project researcher at the Research Institute for Humanity and Nature, where I was fortunate enough to work as an intern during my Master's Program. There, I have continued my research on organic agriculture policy in Bhutan—a field that I was able to enter thanks to my work at the school—as well as on the future of sustainable food.

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**

In order to develop a Global Environmental Studies Directory at Kyoto University, we devise and host regular events, including the Kyoto University Global Environmental Forum, the Hannari Kyoto Shimadai-juku, and the Global Environmental Studies Konwakai. The Kyoto University Global Environmental Forum brings together researchers from inside and outside the university to provide the general public with an insight into the research conducted by the GSGES. First held in April 2008 and generally held three times a year, the forum has been held thirty-two times as of October 2018. The Hannari Kyoto Shimadai-juku, which is held at the Shimadai Gallery in a traditional Kyoto townhouse, includes public lectures that connect the research pursued at the university with everyday life. It was launched in November 2004 and has been held forty times as of March 2018. Meanwhile, the Global Environmental Studies Konwakai is an informal gathering for GSGES faculty members to present and discuss their research. The first Konwakai was held at the time of the GSGES’ establishment in April 2002 and as many as 116 have taken place as of July 2018.

In addition to these events, we also participate in university-wide international seminars and forums related to global environmental studies and collaborate with a variety of events and activities held in Kyoto with the aim of expression related to humankind and the environment.

## **2) Activities designed to promote research**

We provide medium- and long-term support aimed at ensuring that the research of the GSGES is unified toward promoting “global interests”—interests that are above and beyond the gains and losses of human society—and toward the development of civilization across the globe.

The mainstay of these activities is the regular publication of the SANSAI Newsletter, which reports the research and educational activities of the GSGES. The first issue of the SANSAI Newsletter was launched in October 2012, and August 2018 saw the publication of the 22nd issue.

## **3) Activities designed to support education**

We are currently providing support for international education programs provided at Kyoto University and the GSGES. The vibrant activity in international education and research collaboration at the GSGES is presented at the symposiums, seminars, and other such events held several times each year. The following table shows the locations, participant numbers, and other such information on the main symposiums.

### Main International Symposiums held by the GSGES

Date	Location	Collaborating university	No. of participants (universities/countries)
March 5, 2009	Kyoto, Japan	—	155 (11/3)
March 10, 2010	Hanoi, Vietnam	Hanoi University of Science and Technology	85 (11/3)
March 11, 2011	Hue, Vietnam	Hue University of Agriculture and Forestry	150 (11/5)
December 11, 2011	Shenzhen, China	Tsinghua University	97 (5/3)
March 7-8, 2013	Kyoto, Japan	—	141 (15/10)
September 15, 2013	Hoi An, Vietnam	Hue University of Agriculture and Forestry	99 (13/5)
March 25, 2014	Kyoto, Japan	—	141 (10/7)
September 29, 2014	Can Tho, Vietnam	Hanoi University of Science and Technology	90 (14/6)
July 27, 2015	Da Nang, Vietnam	University of Danang	134 (12/5)
December 11-12, 2015	Kyoto, Japan	—	152 (25/16)
November 13-14, 2016	Bangkok, Thailand	Mahidol University	185 (30/14)
October 30-31, 2017	Hanoi, Vietnam	Hanoi University of Science and Technology	285 (42/15)
November 30 - December 1, 2018	Bogor, Indonesia	Bogor Agricultural University	195 (19/9)
November 26-28, 2019	Kyoto, Japan	—	269 (32/17)

主催：京都大学大学院地球環境学堂

「第31回 京都大学地球環境フォーラム」

**ムラのつながり、ムラの未来**

住民が減り、高齢化が進む農村地域では、持続性が危惧される集落（ムラ）がますます増加しています。この状況に対処するために期待されるのがムラをとりまく“つながり”です。近年、近隣のムラから都市、果ては海外まで、ムラをとりまくつながりには大きな変化が生まれています。農村計画学、社会ネットワーク科学、社会心理学の3つの視点から、ムラのつながりの今と未来について考えたいと思います。

プログラム  
13:00 受付開始  
開会の挨拶  
◆13:30～13:40  
講演  
◆13:40～14:20 「農村のつながりの変容：未来はつながりにかかっている？」  
鬼塚 健一郎（京都大学大学院地球環境学堂 助教）  
◆14:20～15:00 「創造農村をいかにして作るか」  
金光 厚（京都産業大学経営学部 准教授）  
◆15:00～15:10 休憩  
◆15:10～15:50 「農村コミュニティにおける社会関係資本：社会心理学からの検討」  
内田 由紀子（京都大学こころの未来研究センター 准教授）  
総合討論  
◆15:50～16:40  
閉会の挨拶  
◆16:40～16:45  
(注)講演者、講演内容は事前の申し込みを必要とすることがあります。

2018年6月2日(土) 13:30～16:45  
会場：京都大学理学部セミナーハウス  
参加無料、先着100名まで（残席がある場合は、当日参加受付可能）

物産品は無料。事前にWebから申し込み頂くか、  
グッズ（付名「第31回地球環境フォーラム」、氏名、所属（申し込み忘れは））をお送り下さい  
<京都大学地球環境フォーラム事務局：地球環境学堂>  
Web申し込みURL: <http://www2.ges.kyoto-u.ac.jp/form/geforum31/>  
Tel: 075-753-5630 Fax: 075-753-9187

wondershare



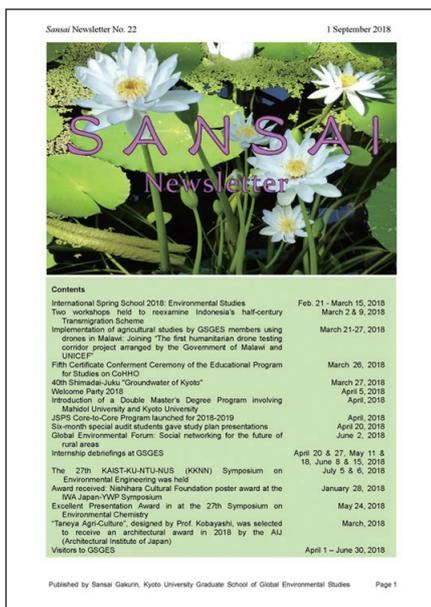
Poster for the 31st Kyoto University Global Environmental Forum and a presentation at the forum (June 2, 2018)



Flyer for the 40th Hannari Kyoto Shimadai-juku and a presentation at the event (March 27, 2018)



Participants at the symposium in Bogor, Indonesia (December 1, 2018)



The SANSAI Newsletter Issue No. 22 (Published September 1, 2018)

# Recent Collaborating Institutions for Internship Study

## Private enterprise

- Aoi Consultants Co., Ltd
- Earthship Academy
- Ecommit
- E-konzal
- Environmental Control Center Co., Ltd
- FP Corporation
- Green Power Investment Corporation
- HACHIOH Co., Ltd.
- JAPAN NUS Co., Ltd.
- JA Saijo
- KANSO CO., LTD.
- Kyoto Environmental Conservation Corporation
- LAGO Co., Ltd
- LINK Co., LTD.
- Miyama Power HD
- Miyama Smart Energy
- NIPPON STEEL CORPORATION
- Ohisama Advanced Energy Co., Ltd.
- OKUMURA CORPORATION
- PricewaterhouseCoopers Aarata LLC
- REVO INTERNATIONAL INC.
- SANKI ENGINEERING INC.
- SHIZEN ENERGY GROUP
- SUNACT Co. Ltd
- TERUKAZU NII & VASANTI MENON, ARCHITECTS & ASSOCIATES
- TOYO CONSTRUCTION CO., LTD
- UEYAKATO LANDSCAPE Co., LTD

## country/the local government

- Kashiwa city
- Katsuragi Town (Wakayama Prefecture)
- Kyoto City Office
- Kyoto City Zoo
- Kyotofu Disaster Volunteer Center
- Kyoto Prefectural Board of Education
- Lake Biwa Environmental Research Institute
- Ministry of the Environment
- Okinawa General Bureau
- Okinawa Prefectural Government Bureau
- Saijo City

## NPO/NGO

- Certified NPO Organization FURUSATOKAIKICENTER
- FUJISAN CLUB
- Green Grass NPO
- Ikaw Ako
- Institute for Sustainable Energy Policies
- Japan Center for a Sustainable Environment and Society
- Koganecho Area Management Center
- LEAF-Leaning and Ecological Activities Foundation for Children
- SATOYAMA NET AYABE
- SHINRINGAKKOU MORINKO
- Social Design Center Awaji

## Various corporation / research organizations

- AEON Environmental Foundation
- Center for Environmental Remote Sensing, Chiba Univ.
- Central Research Institute of Electric Power Industry
- Graduate School of Horticulture, Chiba Univ.
- Institute For Global Environmental Strategies (IGES)
- JAPAN ENVIRONMENTAL SANITATION CENTER
- Japan Fisheries Research and Education Agency
- KYOTO CITY GREENERY ASSOCIATION
- National Agriculture and Food Research Organization (NARO)
- National Institute for Environmental Studies
- National Institute of Advanced Industrial Science and Technology
- Nippon Intemation Cooperation for Community Development (NICCO)
- Public Works Research Institute
- Remote Sensing Technology Center of Japan
- Renewable Energy Institute
- Research Institute for Humanity and Nature
- Research Institute of Environment, Agriculture and Fisheries, Osaka Prefecture
- Sailors for the Sea
- The Japanese Asociacion for Conservation of Architectual Monuments
- The Nature Conservation Society of Japan
- United Nations University Institute for the Advanced Study of Sustainability (UNU-IAS OUIK)

## international organization /overseas

- Bogor Agricultural University
- Caen University and Ifsttar Nantes
- Care Nepal
- Center for International Forestry Research (CIFOR)
- Charles Sturt University
- Chiang Mai University
- Chinese Academy of Sciences
- Chulalongkorn University
- Cooperative Research and Education Center for Environmental Technology Kyoto University-Tsinghua University
- Cumbria Action for Sustainability
- Earthship Academy
- Environment and Public Health Organization
- European University at St. Petersburg
- Hanoi University of Science and Technology
- Hue University
- Hue University of Agriculture and Forestry
- Hue University of Sciences
- Indonesia Joint Crediting Mechanism Secretariat (JCM)

- Indonesian National Institute Aeronautics and Space
- Institute for Food and Resource Economics, Bonn University
- International Center for Tropical agriculture (CIAT) Asia Regional Office
- International Water Management Institute (IWMI)
- Khon Kaen University
- Lille University of Science and Technology
- Lilongwe University of Agriculture & Natural Resources
- Mahidol university
- National Institute of Health of Thailand
- National Parks Board
- National Science and Technology Center for Disaster Reducion
- National Taiwan University
- National Taiwan University Building & Planning Foundation
- Papua New Guinea Forest Authority
- PT Gagas Dianamiga Aksenta
- Qingdao Product Quality Supervision and Testing research Center
- Sarawak Forestry Corporation
- Secretariat of the Pacific Regional Environment
- Sokoine University of Agriculture
- Tarlac State University
- The Gobi Institute
- The Mandalay Technological University
- The NGO Forum on Cambodia
- The University of Applied Forest Sciences Rottenburg
- The University of Da Nang
- Tiyei Organization
- Tongji University College of Architecture and Urban Planning
- Tribuvan University
- UNESCO Bangkok
- UNESCO Ivory coast
- United Nations Environment Programme International Environmental Technology Centre
- University College Cork
- University of Caen Normandy
- University of California San Diego
- University of Jambi
- University of Lorraine
- University of the South Pacific
- University of Modena and Reggio Emilia
- University of Zambia
- Vietnam National Museum of Nature
- Walailak University International College
- Wuhan Water Affairs Co Ltd
- WWF Malaysia Sarawak Office
- Xiamen University
- Xinjiang Ecology and Geography Institute (XIEG) , Chinese Academy of Sciences
- Yangon Technological University
- Zhejiang University

# After Graduation

## Master's Program in Environmental Management

### Private Sector

- Accenture Japan Ltd
- ALMEC CORPORATION
- Central Japan Railway Company
- CHUBU Electric Power Co.,Inc.
- CTI Engineering International Co., Ltd.
- DAIEI KANKYO HOLDINGS
- DAIKEN CORPORATION
- Dai Nippon Printing Co., Ltd.
- DAIWA ENERGY CO., LTD
- Deloitte Tohmatsu Consulting LLC
- DeNA Co., Ltd.
- DENSO CORPORATION
- DENTSU INC.
- Development Bank of Japan Inc.
- EF-ON INC.
- Esri Japan Corporation.
- EXEDY Corporation
- EX Research Institute Ltd.
- FORWARD CO.,LTD.
- Fujitsu General Limited
- Funai Soken Holdings Inc.
- GLION Co.,Ltd.
- HAKUHODO CONSULTING INC.
- Haneda Airport Service CO., LTD.
- Hitachi, Ltd.
- Hitachi Solutions, Ltd.
- Hitachi Zosen Corporation
- IDEA Consultants, Inc.
- IHI Corporation
- INPEX CORPORATION
- Ishizaka Inc.
- JAC Corporation
- Janssen Pharmaceutical K.K.
- JGC CORPORATION
- JTEKT CORPORATION
- Kajima Corporation
- KANTER JAPAN Inc.
- KEYENCE SOFTWARE CORPORATION
- KISOJIBAN
- KOKUSAI KOGYO Co., Ltd.
- Kyoto University
- KYOWA HAKKO BIO CO. LTD.
- Kubota Corporation
- Kumagai Gumi Co.,Ltd.
- Marubeni Corporation
- McKinsey & Company
- Mitsubishi Corporation
- MITSUBISHI MOTORS CORPORATION
- Mitsubishi UFJ Research and Consulting Co., Ltd.
- MITSUI & Co., Ltd.
- Mizuho Information & Research Institute, Inc.
- NAGASE & CO., LTD
- NEC Corporation
- Nihon Suido Consultants Co., Ltd.
- Nippon Koei Co., Ltd.
- NIPPON SYSTEMWARE CO.,LTD.
- NIPPON TELEGRAPH AND TELEPHONE WEST CORPORATION
- NIPPON TELENET CORPORATION
- Nippon Television Network Corporation
- NISSAN MOTOR CORPORATION
- Nomura Research Institute, Ltd.
- Norinchukin Bank
- NTC INTERNATIONAL CO., LTD.
- OBAYASHI CORPORATION
- OKUMURA CORPORATION
- PACIFIC CONSULTANTS CO., LTD.
- Panasonic Corporation
- PIAPIA COMMUNITY SUPPORT G K.
- Rakuten, Inc.
- Roland Berger Holding GmbH
- SANKI ENGINEERING CO., LTD.
- SANYU CO.,LTD.
- Sanyu Consultants Inc.
- SEKISUI CHEMICAL CO.,LTD.
- SHIMIZU CORPORATION
- Shizen Energy Inc.
- Showa Shell Sekiyu K.K.
- Simplex Inc.
- Soft Bank Corp.
- Spicebox, inc.
- Sumitomo Mitsui Trust Bank, Limited
- Sumitomo Mitsui Financial Group, Inc.
- Sumitomo Mitsui Banking Corporation
- Sumitomo Forestry Co.,Ltd.
- Swing Corporation
- The Boston Consulting Group
- TODA CORPORATION
- TOHO GAS CO., LTD.
- Tokio Marine & Nichido Fire Insurance Co., Ltd.
- Tokyo Electric Power Company Holdings, Inc.
- TOKYO GAS Co.,Ltd.
- Tokyo Metro Co., Ltd.
- Toyo Engineering Corporation
- TOYOTA INDUSTRIES CORPORATION
- TSP CO., LTD.
- TSUKISHIMA KIKAI CO., LTD.
- Ultimate Technologies Incorporated
- Value Frontier Co.,Ltd.
- West Japan Railway Company
- Works Applications Co., Ltd.
- Yachiyo Engineering Co., Ltd.
- Yahoo Japan Corporation
- YUGENGAISHA AZUSAKOUMUTEN

## Corporate Organization

- Gotoh Educational Corporation
- Japan International Cooperation Agency(JICA)
- Japan Railway Construction, Transport and Technology Agency
- KYODO NEWS
- National Institute of Technology and Evaluation

## Ministry/Local Government

- Forestry Agency
- Kyoto City
- Ministry of Agriculture, Forestry and Fisheries
- Ministry of Economy, Trade and Industry
- Ministry of the Environment
- Nuclear Regulation Authority
- Shiga Prefecture
- Tokyo Metropolitan Government
- Tsushima City
- Wakayama Prefecture

## Overseas

- Faculty of Social and Politics
- Hue University of Sciences
- King Mongkut's Institute of Technology Ladkrabang
- Land titling office
- MINISTRY OF PUBLIC WORKS AND HOUSING
- SEMARANG STATE UNIVERSITY
- State ministry for national Development planning
- Ti Rayon Soleil
- WILDLIFE CONSERVATION SOCIETY

## Ph.D Program

- OKAYAMA UNIVERSITY
- KYOTO UNIVERSITY

## Doctoral Program

- Bangladesh Agricultural University
- Bandung Institute of Technology
- Bogor Agricultural University
- E-konzal
- HASEKO Corporation
- Hue University of Sciences
- Institute for Global Environmental Strategies
- Japan International Cooperation Agency (JICA)
- Japan Society for the Promotion of Science
- King Mongkut's Institute of Technology Ladkrabang
- KOUMAE accounting firm
- Kyoto University
- Ministry of the Environment Government of Japan
- MINISTRY OF PUBLIC WORKS AND HOUSING
- NIPPON TELENET CORPORATION KICK Smart Life Laboratories
- OBAYASHI CORPORATION
- Research Institute for Humanity and Nature
- School of Urban Rail Translation
- Sumitomo Forestry
- Sumitomo Riko Company Limited
- Thuyloi University
- TOSHIBA CORPORATION
- United Nations Development Programme
- United Nations University- IAS
- Willis Japan Holdings K.K.

# List of Academic Staff

## Department of Global Ecology

### Global Environmental Policy

Professor USAMI Makoto

### Environmental Economics

Professor MOROTOMI Toru

### Global Ecological Economics

Associate Professor MORI Akihisa

### Sustainable Rural Development

Professor HOSHINO Satoshi

Associate Professor ONITSUKA Kenichiro

Assistant Professor BASU Mrittika

### Environmental Health Sciences

Professor TAKANO Hirohisa

Associate Professor UEDA Kayo

Assistant Professor HONDA Akiko

### Historical Geography and Culture

Professor YAMAMURA Aki

Associate Professor TOKUNAGA Yu

### Environmental Marketing Management

Associate Professor YOSHINO Akira

### Ontology of Environment and Technology

Professor SATO Junji

### Environmental Education

Associate Professor Jane SINGER

Associate Professor ASARI Misuzu

Lecturer Roger C. BAARS

## Department of Technology and Ecology

### Environmentally-friendly Industries for Sustainable Development

Professor FUJII Shigeo

Associate Professor TANAKA Shuhei

### Environmental Infrastructure Engineering

Professor KATSUMI Takeshi

Associate Professor TAKAI Atsushi

### Global Environmental Architecture

Professor KOBAYASHI Hirohide

Associate Professor OCHIAI Chiho

### Biodiversity Conservation

Professor SETOGUCHI Hiroaki

Associate Professor NISHIKAWA Kanto

Assistant Professor SAKAGUCHI Shota

### Landscape Ecology and Planning

Professor SHIBATA Shozo

Associate Professor FUKAMACHI Katsue

Assistant Professor NUKINA Ryo

### Environmentally-Friendly Energy Conversion

Professor ABE Takeshi

Associate Professor MIYAZAKI Kohei

## Department of Natural Resources

### Regional Planning

Professor SAIZEN Izuru

Assistant Professor TSUTSUMIDA Narumasa

### Urban Infrastructure Engineering

Professor SUGIURA Kunitomo

Associate Professor HARADA Eiji

Assistant Professor TANAKA Tomohiro

### Atmospheric Chemistry

Professor KAJII Yoshizumi

Assistant Professor SAKAMOTO Yosuke

### Terrestrial Microbiology and Systematics

Professor TANAKA Chihiro

Associate Professor WATANABE Tetsuhiro

Assistant Professor TAKEUCHI Yuko

### Terrestrial Ecosystems Management

Professor FUNAKAWA Shinya

Associate Professor SHINJO Hitoshi

Assistant Professor SHIBATA Makoto

### Integrated Environmental Studies

Professor KATSUMI Takeshi

Assistant Professor ASANO Satoshi

### Ecosystem linkages and Human society

Professor TOKUCHI Naoko

Associate Professor TATENO Ryunosuke

Assistant Professor SUZUKI Keita

## Project

### Environmental Innovator Program (EIP) -Cultivating Environmental Leaders across ASEAN Region-

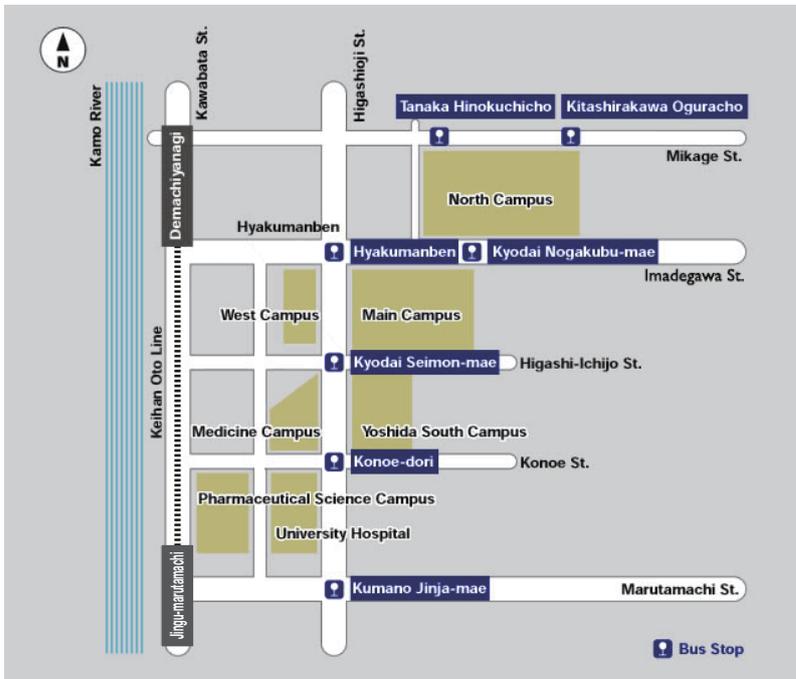
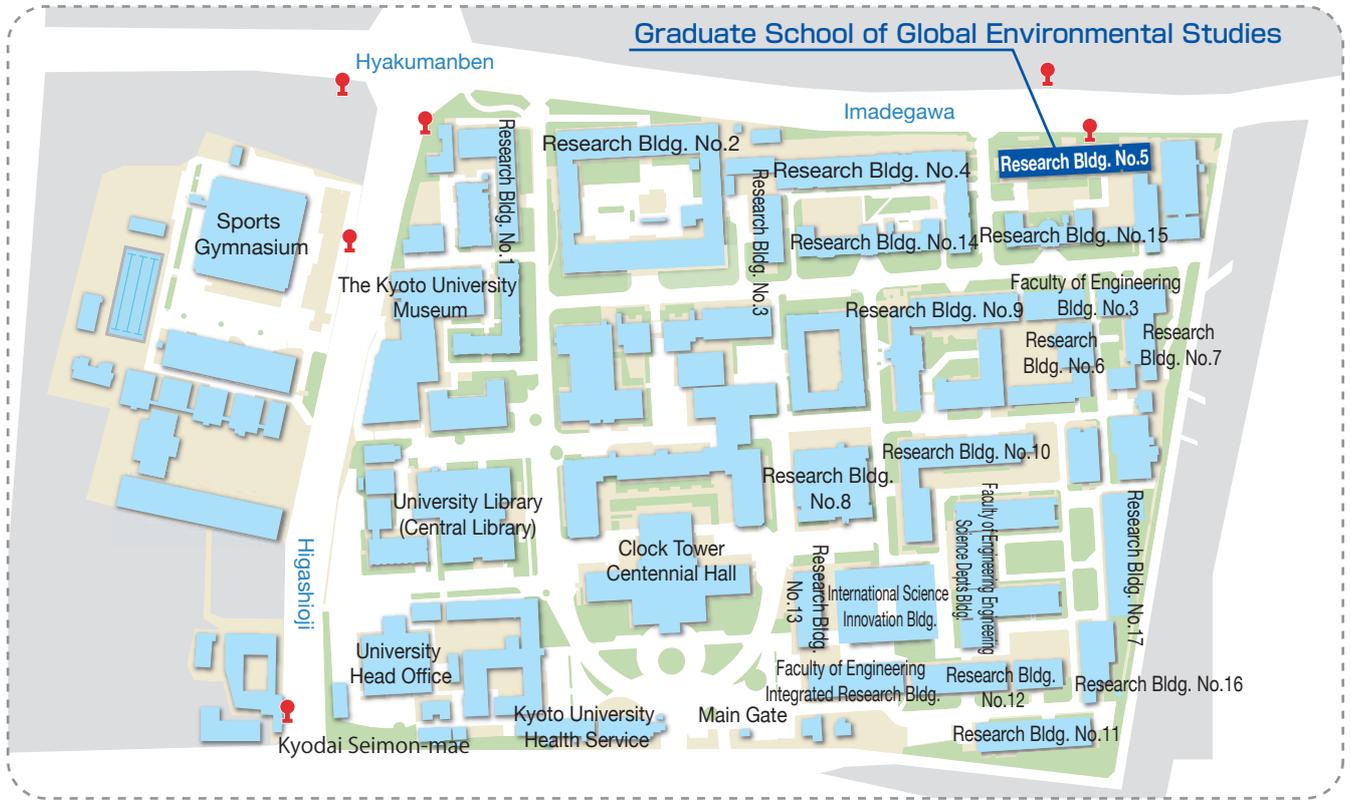
Project Associate Professor Suwanna Kitpati BOONTANON

Project Assistant Professor LIU Wen

Project Assistant Professor MIYAJI Mari

# Location Map

## Yoshida Main Campus



Graduate School of Global Environmental Studies  
GUIDEBOOK 2020

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