


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 2017

ガイドブック 2017

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 are required to participate in one week of fieldwork, held in the summer, 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 477 master's program graduates and 152 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

Shinya FUNAKAWA

Index

Department of Global Ecology

Department of Technology and Ecology

Department of Natural Resources

Introduction

Overview and Objectives

Objectives and features of the Graduate School of Global Environmental Studies

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

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

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

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

Educational, research and support organizations

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

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

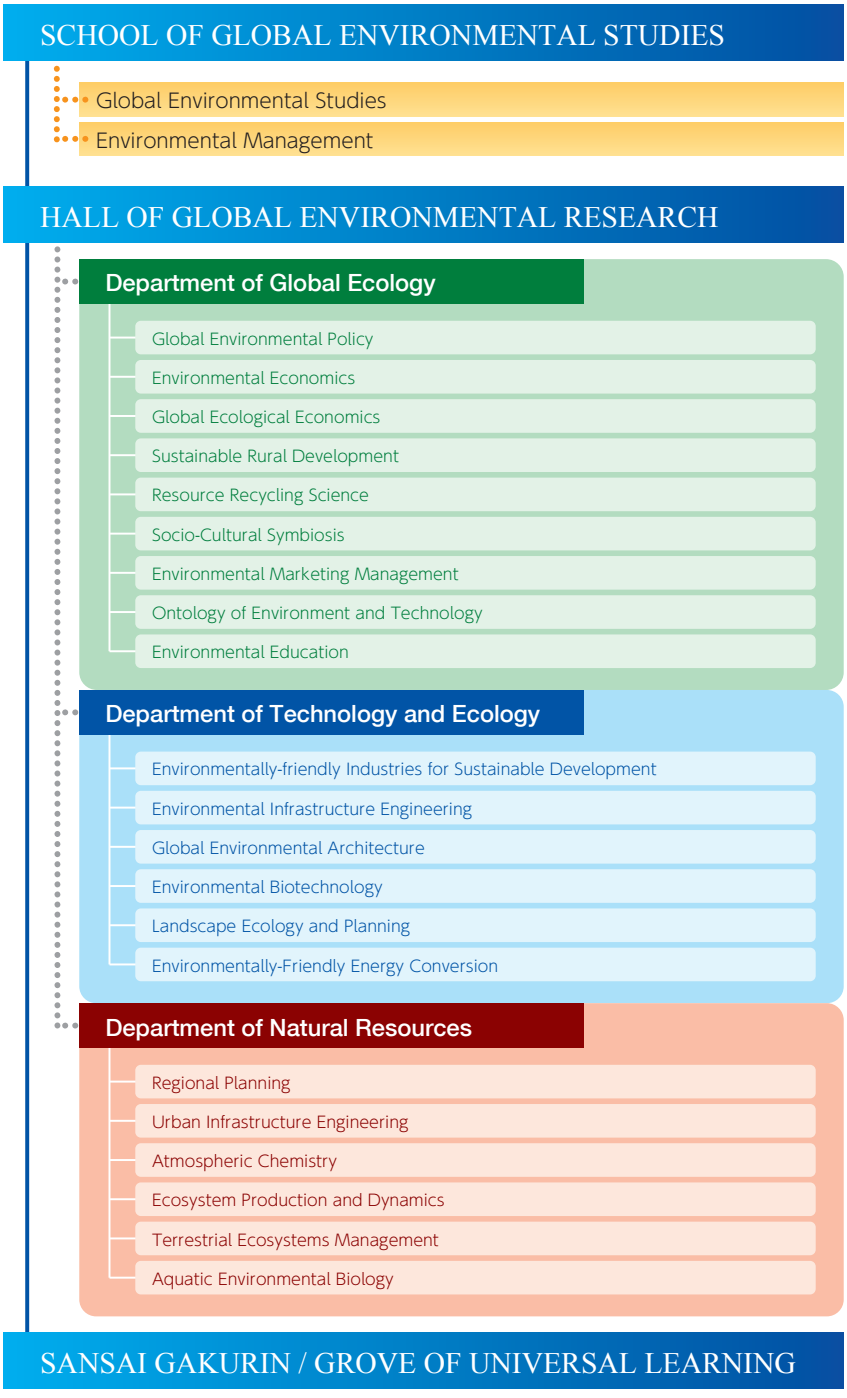
The Graduate School of Global Environmental Studies collaborates with many other graduate schools, institutes and research centers of Kyoto University to conduct interdisciplinary study and education that link other academic fields with global environmental studies. In order to facilitate such support,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

Carrying out university-wide research projects

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

Hall of Global Environmental Research (Research Body)

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



Department of Global Ecology

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

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

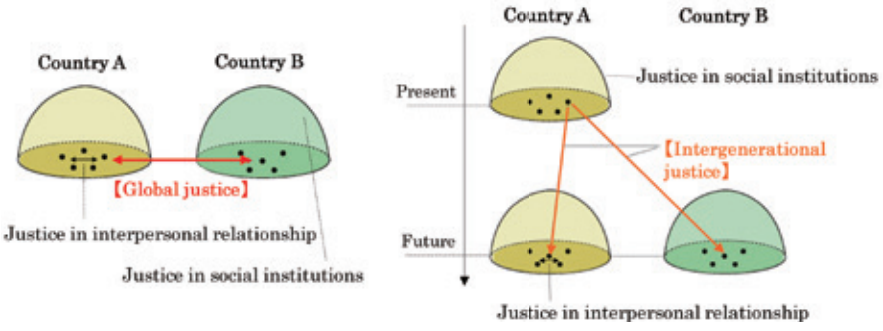
Global Environmental Policy／Environmental Economics／Global Ecological Economics／Sustainable Rural Development／
Resource Recycling Science／Socio-Cultural Symbiosis／
Environmental Marketing Management／Ontology of Environment and Technology／
Environmental Education

Global Environmental Policy

Makoto USAMI, Professor +81-75-753-2967 usami.makoto.2r@kyoto-u.ac.jp

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.



Global and intergenerational justice

Environmental Economics

Toru MOROTOMI, Professor +81-75-753-3510 morotomi@econ.kyoto-u.ac.jp

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

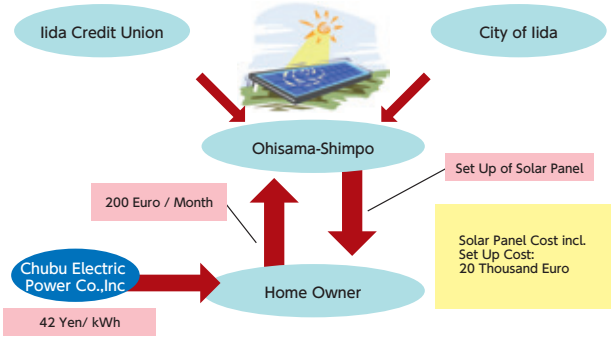
We focus mainly on climate change policies among various environmental issues. As a role of social science, design of social institutions and policy instruments is one of the most important tasks. Environmental policy instruments (environmental taxes, emissions trading systems, subsidies, etc.) are main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

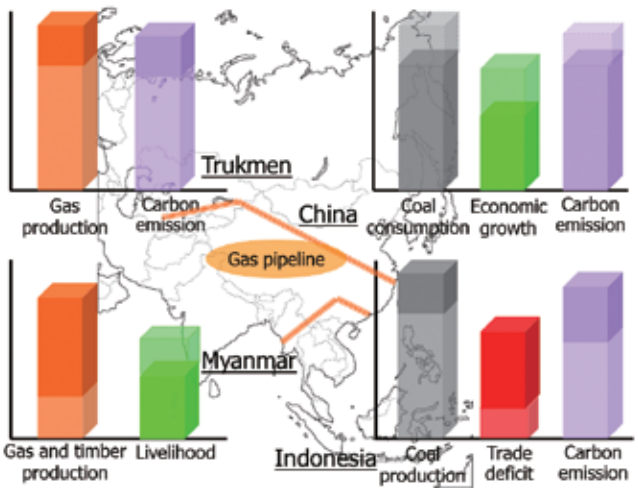
Akihisa MORI, Associate Professor +81-75-753-9203 mori.akihisa.2a@kyoto-u.ac.jp
Soyoung KIM, Project Assistant Professor +81-75-753-9204 kim.soyoung.7c@kyoto-u.ac.jp

Global environmental challenges require us to conduct economic analysis on the carrying capacity of the earth as well as the specific local nature of the environment when we analyze traditional economic challenges such as poverty and business cycles. This implies that we need to revisit the rules and actors of development and to take trans-boundary impacts of development and environmental policies into account.

Against this background, we at the Global Ecological Economics laboratory focus special attention on the following research.

(a) Underlying economic and institutional causes of unsustainable development
(b) Policies, institutions and financial mechanisms that advances sustainable development
(c) Transition toward sustainable pathways
(d) Quality of life and lifestyles when attaining a sustainable society
(e) Global economic system and governance to advance sustainable development globally

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



Global impacts of China's energy-climate policy

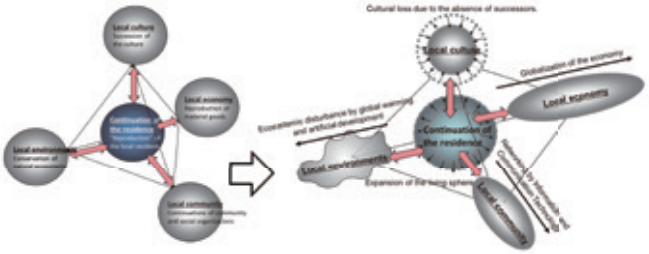
Sustainable Rural Development

Satoshi HOSHINO, Professor +81-75-753-6157 shoshino@kais.kyoto-u.ac.jp
Kenichirou ONITSUKA, Assistant Professor +81-75-753-6159 onitsuka@kais.kyoto-u.ac.jp

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

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

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



Components of Rural Sustainability and their Changes.

Resource Recycling Science

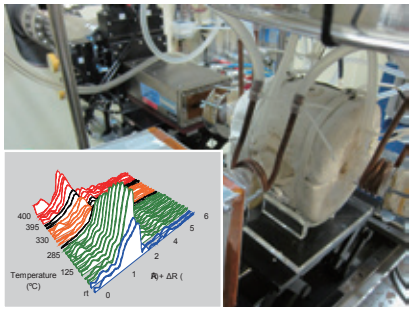
Masaki TAKAOKA, Professor +81-75-383-3335 takaoka@epsehost.env.kyoto-u.ac.jp
Kazuyuki OSHITA, Associate Professor +81-75-383-3336 oshita@epsehost.env.kyoto-u.ac.jp
Takashi FUJIMORI, Assistant Professor +81-75-383-3339 fujimori@epsehost.env.kyoto-u.ac.jp

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

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

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

Landfill site of municipal solid waste in Shenzhen, China



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

Socio-Cultural Symbiosis

Wataru SANO, Professor +81-75-753-2909 sano.wataru.4r@kyoto-u.ac.jp
Ayako IWATANI, Associate Professor +81-75-753-2875 iwatani.ayako.6v@kyoto-u.ac.jp

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

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

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

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

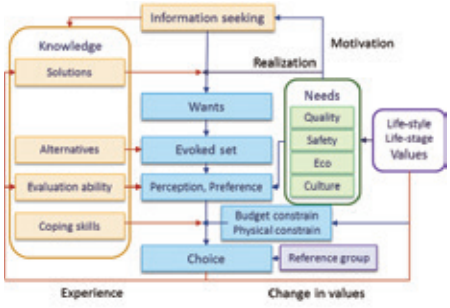
Environmental Marketing Management

Akira YOSHINO, Associate Professor +81-75-753-5921 yoshino@eeso.ges.kyoto-u.ac.jp

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

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

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



A model of consumer behavior in selecting pro-environmental products

Ontology of Environment and Technology

Junji SATO, Professor +81-75-753-5051 sato.junji.6s@kyoto-u.ac.jp

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 anthropocentricism in the life sciences, and to deconstruct a humanized image of nature.

Environmental Education

Jane SINGER, Associate Professor +81-75-753-5933 singer.jane.6e@kyoto-u.ac.jp
Misuzu ASARI, Associate Professor +81-75-753-5922 asari.misuzu.6w@kyoto-u.ac.jp

Our research field is built on three pillars: (1) education for sustainable development (2) community resilience studies and (3) material cycles and low carbon systems and society. We aim to reduce the gap between knowledge and practice through pro-active, field-level, community-based education, research and project implementation.

Education for sustainable development (ESD) empowers individuals and communities to create a more sustainable future. Our activities include development of approaches for formal, non-formal and informal sustainability education as well as efforts to promote campus sustainability. Community resilience studies focus on migration and displacement induced by development, disasters and climate change, with special emphasis on inclusion of multiple stakeholders to enhance well-being while preserving a community's natural resource base. Finally, we focus on material cycles and low carbon system approaches, mainly on communities that include campus, Kyoto and local communities, and the Asia Pacific region, with emphasis on MSW (municipal solid waste), disaster waste, and energy saving awareness and behavior.

From conducting research, internships and collaborative projects, faculty and students develop unique community-based approaches for education, environmental management, communication and sustainable development.

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.

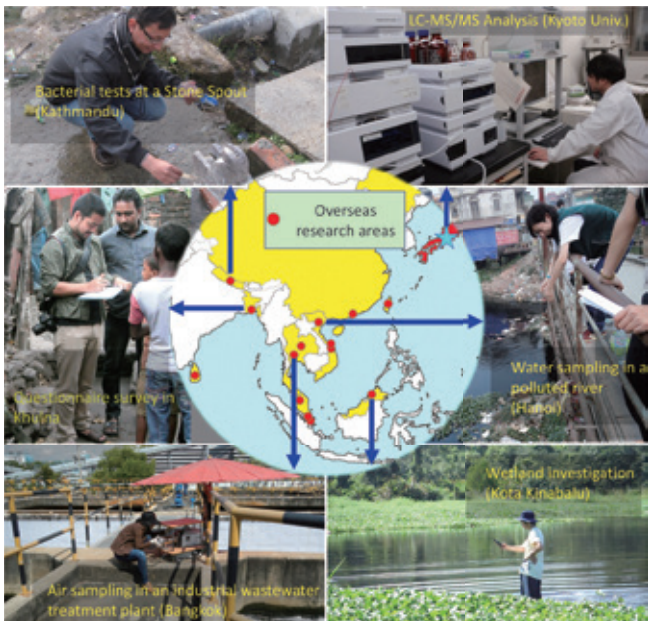
Environmentally-friendly Industries for Sustainable Development／Environmental Infrastructure Engineering／
Global Environmental Architecture／Environmental Biotechnology／Landscape Ecology and Planning／
Environmentally-Friendly Energy Conversion

Environmentally-friendly Industries for Sustainable Development

Shigeo FUJII, Professor	+81-75-753-5151	fujii@eden.env.kyoto-u.ac.jp
Shuhei TANAKA, Associate Professor	+81-75-753-5171	t-shuhei@eden.env.kyoto-u.ac.jp
Hidenori HARADA, Assistant Professor	+81-75-753-5169	harada@eden.env.kyoto-u.ac.jp

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

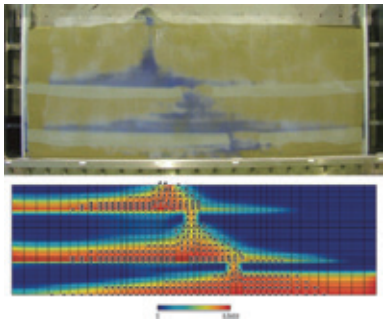
Environmental Infrastructure Engineering

Takeshi KATSUMI, Professor	+81-75-753-9205	katsumi.takeshi.6v@kyoto-u.ac.jp
Toru INUI, Associate Professor	+81-75-753-5752	inui.toru.3v@kyoto-u.ac.jp
Atsushi TAKAI, Assistant Professor	+81-75-753-5114	takai.atsushi.2s@kyoto-u.ac.jp

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

Bird view of an inland waste disposal landfill site

Global Environmental Architecture

Kenji OKAZAKI, Professor	+81-75-753-5773	okazaki@archi.kyoto-u.ac.jp
Hirohide KOBAYASHI, Associate Professor	+81-75-753-4806	kobahiro@archi.kyoto-u.ac.jp
Chiho OCHIAI, Assistant Professor	+81-75-753-5723	ochiai.chiho.2x@kyoto-u.ac.jp

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

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

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

Design for a harmonious human environment and its contexts

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

Field survey on housing reconstruction after Nepal Earthquake

The application of environmental design for trial architecture (photo: Taneya Agri-Culture)

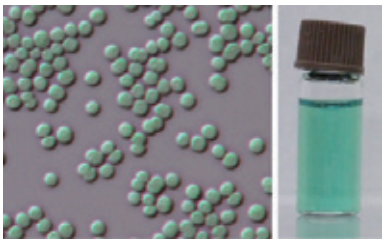
Environmental Biotechnology

Hideaki MIYASHITA, Professor	+81-75-753-7928	miyashita.hideaki.6v@ kyoto-u.ac.jp
Tohru TSUCHIYA, Associate Professor	+81-75-753-6575	tsuchiya.toru.8e@kyoto-u.ac.jp
Ryoma KAMIKAWA, Assistant Professor	+81-75-753-7894	kamikawa.ryoma.7v@kyoto-u.ac.jp

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

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

Phytoplankton research at Lake Biwa



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

Landscape Ecology and Planning

Shozo SHIBATA, Professor	+81-75-753-6084	sho@kais.kyoto-u.ac.jp
Katsue FUKAMACHI, Associate Professor	+81-75-753-6081	katsue@kais.kyoto-u.ac.jp
Junichi IMANISHI, Assistant Professor	+81-75-753-6099	imanishi@kais.kyoto-u.ac.jp

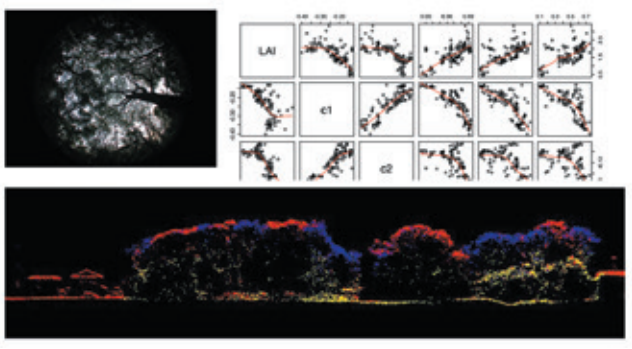
The goals of our laboratory can be summarized as:

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

Takeshi ABE, Professor +81-075-383-2487 abe@elech.kuic.kyoto-u.ac.jp
Tomokazu FUKUTSUKA, Associate Professor +81-075-383-2483 fuku@elech.kuic.kyoto-u.ac.jp
Kohei MIYAZAKI, Assistant Professor +81-075-383-7049 myzkohei@elech.kuic.kyoto-u.ac.jp

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

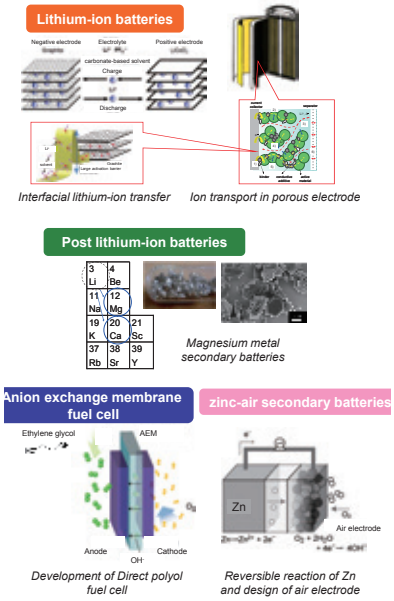
Fundamental research on the "electrode/electrolyte interface" and "ion transfer in electrodes" to elicit performance of lithium-ion batteries.

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.



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／
Ecosystem Production and Dynamics／Terrestrial Ecosystems Management／Aquatic Environmental Biology／

Regional Planning

Tsugihiro WATANABE, Professor +81-75-753-6367 nabe@kais.kyoto-u.ac.jp
Izuru SAIZEN, Associate Professor +81-75-753-6369 saizen@kais.kyoto-u.ac.jp
Narumasa TSUTSUMIDA, Assistant Professor +81-75-753-6368 naru@kais.kyoto-u.ac.jp

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 field survey. Current topics are follows:

Monitoring of Regional Environments by GIS/RS

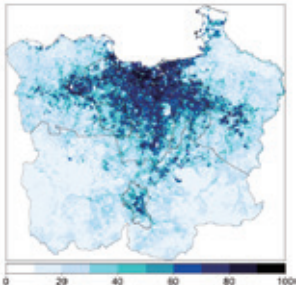
For the implementation of appropriate regional planning for managing environments, land use/cover is modelled by using GIS/RS:

Monitoring of urban expansion (Indonesia); Evaluation of resilience for climate changes (India, Philippines); 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:

Land use analysis and forest resource management (Vietnam); Evaluation of social impacts of environmental conservation agriculture (Philippines); Evaluation of effective use of open geo data for natural social resource management (Tsushima, Japan).



Urban monitoring in Jakarta Metropolitan area in Indonesia

Interview survey for ethnic minority in Vietnam.

Urban Infrastructure Engineering

Kunitomo SUGIURA, Professor +81-75-383-3160 sugiura.kunitomo.4n@kyoto-u.ac.jp
Eiji HARADA, Associate Professor +81-75-383-3310 harada@particle.kuciv.kyoto-u.ac.jp
Tomohiro TANAKA, Assistant Professor +81-75-383-3363 tanaka@hywr.kuciv.kyoto-u.ac.jp

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

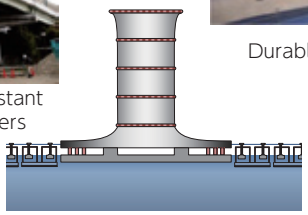
- Application of High Performance Materials to Bridge Structures
- NDE, Monitoring, Structural Integrity Evaluation and Life Prediction of Aging Steel Structures
- Development of Floating SUPG

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

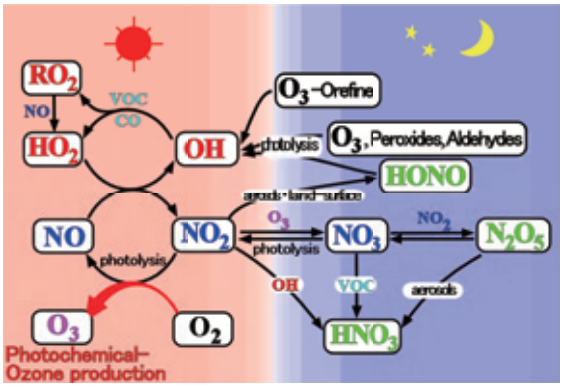
Atmospheric Chemistry

Yoshizumi KAJII, Professor +81-75-753-6897 kajii.yoshizumi.7e@kyoto-u.ac.jp
Yosuke SAKAMOTO, Assistant Professor +81-75-753-6634 sakamoto.yosuke.7a@kyoto-u.ac.jp

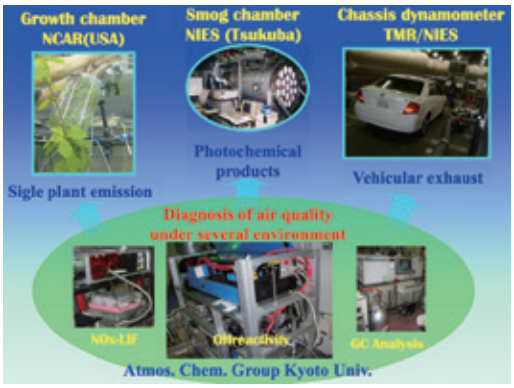
We investigate atmospheric chemistry, mainly focusing on the issue of photochemical ozone formation. Despite the apparent downward trends for both NOx and VOCs (precursors of photochemical oxidants) detected in mega-cities in many advanced countries, including Japan, photochemical oxidants have still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

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

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



Mechanism of oxidant formation



Research activities

Ecosystem Production and Dynamics

Akira OSAWA, Professor +81-75-753-6095 aosawa@kais.kyoto-u.ac.jp
Naoki OKADA, Associate Professor +81-75-753-6097 okad@kais.kyoto-u.ac.jp
Masako DANNOURA, Assistant Professor +81-75-753-6094 dannoura@kais.kyoto-u.ac.jp

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

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

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


Fig.1


Fig.2

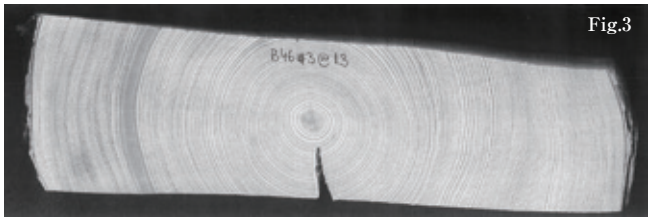


Fig.3

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

Terrestrial Ecosystems Management

Shinya FUNAKAWA, Professor +81-75-753-6101 funakawa@kais.kyoto-u.ac.jp
Hitoshi SHINJO, Associate Professor +81-75-753-6299 shinhit@kais.kyoto-u.ac.jp
Tetsuhiro WATANABE, Assistant Professor +81-75-753-6101 nabe14@kais.kyoto-u.ac.jp

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

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


Clear-cutting of tropical lowland forest in Indonesia


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

Aquatic Environmental Biology

Yoh YAMASHITA, Professor +81-75-753-6410 yoh@kais.kyoto-u.ac.jp
Keita SUZUKI, Assistant Professor +81-773-62-5512 suzuki.keita.3r@kyoto-u.ac.jp

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

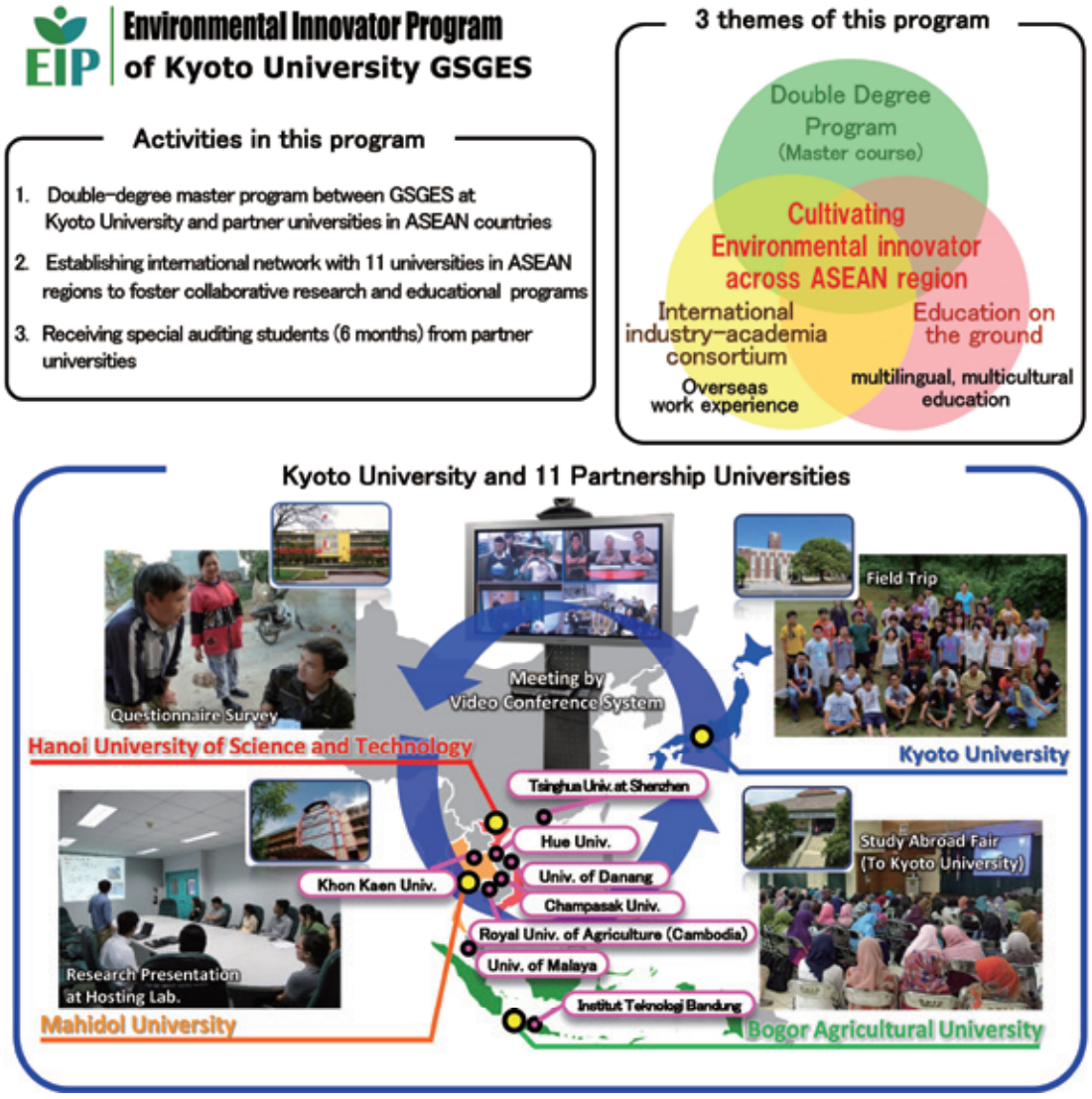
Environmental Innovator Program EIP
– Cultivating Environmental Leaders across ASEAN Region –

Suwanna Kitpati BOONTANON, Project Associate Professor (Mahidol Univ.) suwanna.boo@mahidol.ac.th
Yuji SUZUKI, Project Assistant Professor +81-75-753-5168 suzuki@eden.env.kyoto-u.ac.jp

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 strengthen 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 a 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.



Top Global University Project
"Japan Gateway: Kyoto University Top Global Program" (JGP) Environmental Studies

Yuki OKAMOTO, Project Assistant Professor +81-75-753-5050 okamoto.yuki.4x@kyoto-u.ac.jp

"Japan Gateway: Kyoto University Top Global Program" (JGP) was established to implement international joint education and double degrees with world-class partner universities prominent in such research areas as Mathematics and Chemistry, where Kyoto University has demonstrated particular international competitiveness. In the area of Environmental Studies, the Graduate School of Global Environmental Studies plays a central role in preparing for implementation of interdisciplinary and practical research on environmental issues, both on a global and local scale. To this end, the Graduate School of Global Environmental Studies is collaborating with the Graduate School of Agriculture to facilitate an international joint education and double degree program. Through this global education and research initiative, the program seeks to foster young researchers who can gain skills and knowledge of environmental studies to enable them to perform capably on the world stage.

1) International double degree program

The program has been conducting a double degree program with Gadjah Mada University (Indonesia) and Kasetsart University (Thailand). A Dual master degree programs with Mahidol University (Thailand), and with Bogor Agricultural University (Indonesia) are planned to be implemented in 2017.

2) International joint education program

The program provides various international educational activities. In February 2016, for example, a short-term study abroad program, named "JGP-GSGES Spring School at Kyoto 2016" was implemented to enable students to understand about the environment in Japan and learn analytical skills and knowledge through field work, laboratory work and lectures. A total of 21 selected students from 16 universities participated in learning about environmental studies at Kyoto University's multicultural atmosphere.

3) International research and study abroad fair

The program is also joining "Study Abroad Fairs" held in various countries i.e. Vietnam, Thailand, Tanzania etc. In addition, international collaborative studies/field work/researches have been conducted throughout Southeast Asia.

http://www2.jgp.ges.kyoto-u.ac.jp/

American Universities
- Dalhousie University (Canada)
- Hawaii University at Manoa (U.S.A.)

African University
- Sokoine University of Agriculture (Tanzania)

European Universities
- KU Leuven (Belgium)
- Universite de Bretage Occidentale (France)
- Universite de Lille 1 (France)
- Universite de Lorraine (France)
- University College Cork (Ireland)
- University of Naples Federico II (Italy)
- Delft University of Technology (Netherland)
- Universitat Politècnica de València (Spain)
- Eidgenössische Technische Hochschule Zürich (Switzerland)
- University of Leicester (U.K.)

Asian Universities
- Royal University of Agriculture (Cambodia)
- Tsinghua University at Shenzhen (China)
- Banaras Hindu University (India)
- Indonesia University (Indonesia)
- Institut Pertanian Bogor (Indonesia)
- Institut Teknologi Bandung (Indonesia)
- Universitas Gadjah Mada (Indonesia)
- Kazakh National Agrarian University (Kazakhstan)
- Seoul University (Korea)
- Champasak University (Laos)
- National University of Laos (Laos)
- Malaya University (Malysia)
- Yezin Agricutural University (Myanmar)
- National Taiwan University (Taiwan)
- Chiang Mai University (Thailand)
- Kaset Sart University (Thailand)
- Khon Kean University (Thailand)
- Mahidol University (Thailand)
- Ha Noi University of Science and Technology (Vietnam)
- Hue University (Vietnam)
- The University of Da Nang (Vietnam)

Introducing the Faculty

Geo-environmental engineering for soil utilization and waste containment

Professor Takeshi KATSUMI
Environmental Infrastructure Engineering (Environmental Geotechnics)

Utilization of excavated soils from construction works

We conduct various construction works to build and maintain fundamental infrastructures which are necessary to our lives. For example, itthey includes transportation systems such as roads and railways, lifelines such as electricity, gas, water and sewerage, the structures near the coast, and river dikes as well. In constructingion of such infrastructures, “soils” are widely excavated and utilized as materials for leveling the ground. Since the old days, in our country, people have advanced those methods technically and systematically, and used these soils at the same construction site or another neighboring site in order to contribute to the environmental consideration, not disposing those soils just as the waste. It has been expressed as “balance the cutting and the filling”. On the other hand, recently the proper management of the toxic substances has been strictly required in society. If the soils contain toxic substances over a certain level, they have to be subject to some restrictions, which are sometimes excessive ones. In particular, if excavated soils and rocks contain arsenic, lead, fluorine and boron at a significant level, which are often contained naturally, such soils and rocks had to be disposed of as contaminated soils in many situations regardless of its excellent mechanical properties as geomaterials. Although disposal of contaminated soils might be an effective way to resolve the environmental problem at site and its neighborhood, we should also mind that those soils occupy the spaces where waste materials should be disposed of, from the perspective of the whole society. Thus, we think that utilization of such contaminated soils in roads and dikes should be promoted by applying techniques which can “immobilize” or “contain” toxic substances In our laboratory, we are conducting various studies on how to safely contain toxic substances in geostructures, which cover the development of technologies to control mass transfer such as hydraulic barrier, containment, immobilization, and sorption layers. Our studies are also related to the clarification of mobility and behavior of chemicals of concern which underlie the studies above. Furthermore, we are trying to organize and implement social systems which enable practical implementation of those technologies in real society.

Geo-environmental containment of contaminants

Waste disposal is also an important environmental consideration. In waste landfills, hydraulic barriers are installed in order to prevent soil and groundwater contamination. Earthen Soil-based barriers consisting primarily of clay, such as clay liner and soil bentonite to have low impedance against water and chemical substances, and can be expected to have long-term durability because they consist only of organic minerals. Thus, it is used not only for hydraulic barriers in waste landfills but also for containment of soil and groundwater contamination. We are working on some research related to performance and durability of such earthensoil-based barriers, and attempting to spread these techniques. Since disposal of waste containing nuclides has become an important recent challenge after the nuclear power plant accident, the shielding effect of soilearthen-based barriers against the wastes containing nuclides is also studied.

Overall, our laboratory is trying to accumulate academic knowledge related to geoenvironmental issues through various research for utilization of contaminated soils and rocks under the proper management.

The environmental issues and “politics”

Professor Wataru SANO
Public Policy

Although many researchers have been proposing superb measures and methods to resolve the environmental issues, regrettably, it seems not all of them are actually put into action. There might be various reasons, but I think one of them exists in “politics”. In spite of those policy proposals, they are disturbed by “politics”, in other words, they cannot get any backing from “politics”, so that the environmental issues have not been resolved. What is the definition of “politics” in here? There are several meanings in “politics”. For example, you understand “politics” as “conflicts of interests or a sense of value”. If so, “the environmental issues are not resolved because of the politics” may mean that “people cannot easily make a consensus because there are so many conflicts of interests or a sense of value over an environmental issues”. Or it may mean that “the issues are not resolved because only one side of the interests or a sense of value which belong to people who have strong power always take the priority”.

You can also comprehend “politics” as “aggressive leadership by the government and the politicians”. In this case, although “politics” essentially should coordinate and lead the people, goods, money, knowledge, and so on, it comes down to the weakness of “power”, that is to say “politics”, that cause the delay of the resolution for those issues. On the other hand, some people might consider “politics” as a kind of “dirty activities” such as power game over the interests. If we cannot resolve the environmental issues by those “dirty activities”, the point would be “how to resolve the issues away from such “dirty activities”.

Thus, even a single word “politics” contains such various contents. However, if you truly would like to resolve the environmental issues, it would be obvious that you cannot avoid to think about “politics”. Then next, how can we realize “politics” which enable us to resolve the environmental issues?

The theme of research and our seminar

As for the theme of my own research, to put it briefly, it is a quest for the proper style of “politics” in order to resolve the various social problems including environmental issues. If I say in more details, it is for planning the systems of politics which would enable us to make the proper policies. The word politics in here means not only the election, the Congress, or the Cabinet, but also the various conflicts and power relationship existing in the society, including the social systems such as the judiciary and administration. It may seem to be a detour to consider the resolution of the environmental issues in this broad sense of politics, but I believe this is truly the most important task in reality.

Therefore, in my laboratory, students are conducting a wide range of studies. Such as a student who is conducting a theoretical study on how the design of policy should be in democracy, or a student who is doing research on the role of government administrators in local government. In our seminar, we read a various kind of books. We sometimes read books about the difficulties which current U.S. government has, such as *The Next Government of the United States: Why Our Institutions Fall Us and How to Fix Them* (Donald Kettle, Keiso Syobo), and at other times, we read books which are reviews theoretically on Democracy, such as *Democratic Autonomy* (Henry Richardson, Oxford University Press). Although the name of subject, “The relationship between politics and the environmental issues”, is easy to say, it is truly elusive, vague and complicated, we are waiting for students who dare to deal with such difficult issues.

Environmental Refugees and Development-Induced Displacement

Associate Professor Jane SINGER
Environmental Education

Ethical concerns raised by displacement

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

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

Displaced by a hydropower dam in Vietnam

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

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

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

Traditional system to use natural resources of satoyama landscapes

Associate Professor Katsue FUKAMACHI
Landscape Ecology and Planning

The significance of investigating the traditional system of satoyama landscapes

Each satoyama landscape in Japan has a different combination of factors such as villages, arable lands, forests, and rivers. The use and the management of natural resources of the satoyama landscapes has been carried out in accordance with the relation among the forests, the local forests, and the waterside in each district. In recent years, the satoyama landscape was defined as "socio–ecological production landscapes and seascapes in Japan" (UNU-IAS, 2010). There are two components that have been researched nationwide and have been better understood. One is the style of life and activity which has been nurtured in the relationship with the nature in an area. The second is the system to use the natural resources of the satoyama landscapes which has been structured in accordance with those styles.

By identifying the traditional system of the satoyama landscape thoroughly, we came to know the significance of the satoyama landscape for its ecological benefit and the community culture. Accordingly, we are getting to comprehend the real villages, which consists of agricultural villages, mountainous villages, and fishing villages, utilizing the natural resource effectively and sustainably. It could be depicted as a process of drawing the ideal future image of the satoyama landscape by perspectives; the perspective of understanding and applying the structure and the relation of the satoyama landscape, and the perspective of making use of the history and tradition of the area. Also, the method can be considered as a cultural and ecological approach, used to find out about new skills and mechanisms in modern villages. This allows us to adopt it to the modern society while maintaining its characteristics.

Toward the future use and management of the natural resources of the satoyama landscape

There is a case, where the local residents use the space differently in accordance with its name of place and its natural and social environment. This is based on their spatial perception. They designated the sites, quantities, and frequencies by the type of natural resources so the excessive tree cutting should not cause an exhaustion or a disaster. Thus, the highly complex land ownership system and organization management have been functioning effectively. It has been reported that these efforts are well connected to the conservation of biological diversity and ecosystem which is distinct to the region.

We can observe more cases, where the essentials are well understood and the natural resources of the whole satoyama landscape have been used and managed properly and sustainably. The scenes of people's daily lives, recreations, working, and the religious activities have been connected organically by roads and channels, and as time went by, its important areas and transportation networks have been utilized as a space for work and religion. Also the lands which include the boundary space against the other village have been used as the common lands to keep its area and its resources sustainable, and moreover, their limited natural resources have been distributed as fairly as possible. When local resident use the space differently in accordance with the situation and implementing their own rules and systems, it also has another meaning, that is to say, a risk management where the satoyama landscape make preparations and adopt itself to the disasters such as a flood or slope failure.

On the other hand, as the circumstance of its society has got changed, the convention mechanism of the satoyama landscape has also changed largely, and what is more, it is becoming a mere shell or is disappearing. The relation between the district and its natural environment and its natural resources has also changed, and the districts have various problems. The number of lands whose owners are unknown or managed by nobody have also increased, and the problems concerning the regional disaster prevention or the prevention of the biological diversity have been occurred. In order to deal with these problems, it is crucial to structure a system for the use and management of natural resources in the framework of a landscape including the whole area of the districts, and it is essential to understand the local forest by its peculiarity as well as its universality.

Introducing the Laboratories

Research Laboratory Profile: Professor Makoto USAMI

Global Environmental Policy, Department of Global Ecology

—What kind of research do you do, Professor Usami?

I do research on legal philosophy in connection with environmental issues. I approach environmental problems and policies from the perspective of justice, with a particular interest in expanding the applicable scope of this ideal. People of the same era share straightforward rules of justice, such as the principle that items borrowed should be returned. But what about those of different generations? Given that future people will be adversely impacted by the environmental degradation we cause today, we can conceive an obligation for the current generation to act with consideration for future generations. On the other hand, what is the reason for obliging the current government to use its citizens' money on policies for the benefit of people in the distant future long after we ourselves have departed, such as 500 or 1,000 years from now? One of my research interests is to explore environmental problems and policies from the viewpoint of intergenerational justice. I am also interested in the issue of apportionment beyond national borders. For example, the tensions between developed and developing countries over the reduction of CO_2 emissions show that climate change is a question of global justice. Climate justice, which is the subject of much research in the international academic community in recent years, thus encompasses the dual facets of intergenerational justice and global justice.

—How do you run your laboratory?

Currently there are seven Doctoral students, 11 Master's students, and four research students in my laboratory. I have six international students from China, two from Indonesia, one from South Korea, one from Switzerland, and one from Bangladesh. We use a mixture of English and Japanese in our seminars. The large number of international students is a feature of the School of Global Environmental Studies, and I think that engaging in discussions and interactions with these students offers great stimulation to our Japanese students, too. There are three pillars to research supervision in my laboratory: (1) individual consultations of approximately one hour each, held periodically; (2) seminars, held on an ad hoc basis; (3) joint seminars with other research laboratories in the social sciences, held bi-annually. (2) and (3) involve presentations and discussions among graduate students of many different disciplines and specializations, enabling my students to gain feedback from a variety of angles and delve deeper into their own research.

—Tell us about your graduate students' research.

My current students are engaged in an extremely diverse range of research projects, including psychological exploration of motivations for citizens to purchase green products, inquiry into indigenous people's attitudes toward the commodification of genetic resource in Indonesia, econometrical analysis of the development of solar panel technology in South Korea, case study of climate change adaptation projects in Africa, legal research on international treaties on radioactive waste, and theoretical analysis of climate justice.

— (Question to Ms. Cita Ekanijati an international student from Indonesia who presented at Professor Usami's laboratory research reporting session on January 26, 2016) Tell us what motivated you to study in Professor Usami's laboratory and about the School of Global Environmental Studies.

Cita: I study environmental policy under Professor Usami. Both the Professor and the other graduate students provide valuable comments to support my research, and the laboratory also has many books and other materials. In Indonesia, it is not common for students to learn directly from a professor. The access to direct, attentive professorial supervision is one of the great attractions of the School of Global Environmental Studies. The School also has systems that provide students with financial support for projects, internships and participation in international conferences. I hope to become a university faculty member when I return to Indonesia.

—Interviewer's Postscript

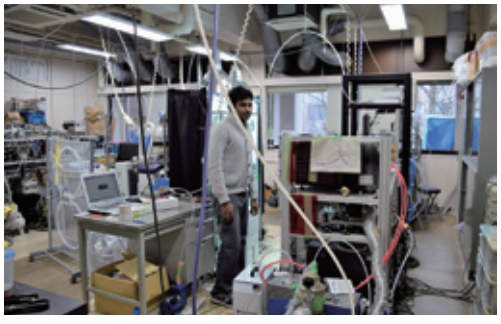
Environmental problems have been recognized as global-level challenges for many years now, but these problems are broad-ranging not only in spatial terms but in temporal terms as well. To what extent can we share common rules and ethics in relation to such multi-dimensional problems? The basis for addressing the question of responsibility beyond generations may already exist within Asian societies, but the design of actual institutions for this purpose is still a work in progress. Furthermore, achieving global consensus on how to deal with environmental problems requires not only the reconciliation of different value outlooks but also the striking of political and economic bargains. Professor Usami has an open, global laboratory that reflects precisely these challenges. (Ayako IWATANI)

Research Laboratory Profile: Professor Yoshizumi KAJII

Atmospheric Chemistry, Department of Natural Resources

—What kind of research do you do, Professor Kajii?

I specialize in atmospheric chemistry. My research involves detecting and evaluating atmospheric substances and shedding light on the mechanisms of atmospheric pollution. In the 1970s, atmospheric pollution became a serious social problem in Japan as well. Photochemical smog is caused by substances known as oxidants, which are formed when nitrogen oxides (NOx) found in gas emissions react with volatile organic compounds (VOCs) in the atmosphere. Japan achieved a reduction in oxidants in the 1980s, as a result of factors such as the impact of the Air Pollution Control Act and combined public and private sector efforts to keep the air clean. Since the 1990s, however, oxidants have been increasing once more, and identifying the cause of this increase has become an urgent priority. Oxidant concentrations tend to be higher in spring and lower in summer, meaning that the ongoing increase cannot be attributed simply to long range transport of pollutants such as PM2.5 from China. There is thus a need to detect both oxidants and the VOCs from which PM2.5 particles and oxidants are formed, but it is extremely difficult to identify them given that there are between 500 and 2000 different types of VOC. We have focused our attention on substances known as OH radicals. When they react with VOCs in the atmosphere, OH radicals form stable H_2O molecules and dissipate. Measuring the speed of such dissipation yields data corresponding to the overall volume of atmospheric VOCs. In our research lab, we have a hand-made device that uses laser technique to create OH radicals artificially and causes them to react with compounds in the atmosphere. Working in partnership with the National Institute for Environmental Studies and other universities, we use this device to measure atmospheric compounds in order to gain our understanding of the chemistry in the air.



—How do you run your laboratory?

My laboratory currently has two Program-Specific Researchers, one Master's student, and one Doctoral student in the Graduate School of Human and Environmental Studies, and five Master's students in the Graduate School of Global Environmental Studies. Each morning at 9:30, Program-Specific Researchers and the Doctoral students gather with my Assistant Professor, Yosuke Sakamoto, for a brief meeting. Once a week, a seminar is held for undergraduate and graduate students, where we report on the progress of our research. Once every half-year, all graduate students make presentations

on their research. We also hold journal meetings to review the latest academic journals, including a monthly joint journal meeting with the laboratory of Professor Masahito Sugimoto (Aquatic Chemistry, Graduate School of Human and Environmental Studies). There is also a weekly workshop organized by the graduate students themselves, with study activities including thematic summary of books in the field of atmospheric chemistry.

— (Question to the graduate students gathered in the laboratory) Tell us about your research.

Student A: I am studying in Professor Kajii's laboratory because I want to deepen my interest in atmospheric pollution.

Student B: I am interested in automobiles, and I do research on exhaust gases.

Student C: I am researching the mobility of substances in the environment.

Student D: My motivation was the Kyoto Protocol. CO_2 is said to be the cause of global warming, but there may be other factors as well. That is what I am researching.

—Tell us what the atmosphere in the laboratory is like.

"Free" might be the best word. We can choose our own research topics freely, and we are allowed to do our research in the manner in which we choose. I was even able to do research overseas, in Vietnam, when writing my Master's thesis. It was a great learning experience.

—Interviewer's Postscript

I gained a sense of the "freedom" of Professor Kajii's laboratory even during my own brief visit there. Despite my status as a complete stranger to his academic field, Professor Kajii took the time to explain his research to me carefully and coherently. The innovative, cutting-edge content of his research seemed to strike a great contrast with the hand-made device fitted with a profusion of pipes and the adjacent case full of plants used in the measurement of VOCs. In Professor Kajii's lab, today is another day in the ongoing search for solutions to environmental problems through the power of science. (Ayako IWATANI)

School of Global Environmental Studies (Educational Body)

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

Doctoral Program in Global Environmental Studies

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

Master's Program in Environmental Management

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

Doctoral Program in Environmental Management

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

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

Doctoral Program in Global Environmental Studies

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

1 Curriculum structure

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

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

2 Progress towards the degree

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

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

3 Admission information

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

Master's Program in Environmental Management

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

1 Curriculum

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

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

2 Internship

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

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

3 Progress towards the degree

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

4 Admission information

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

Doctoral Program in Environmental Management

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

1 Curriculum

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

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

2 Internship

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

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

3 Progress towards the degree

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

Doctoral Degree in Global Environmental Studies awarded to student.

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

4 Admission information

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

*Note for applicants from overseas

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

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 21st century.

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

Master's Program Completion

Acquire a wide range of expertise and management skills for practical and sustainable solutions to environmental problems, and complete a master's thesis.

Doctoral Program Completion

Acquire professional capacities and expertise for pursuing independent research and professional work, and complete a doctoral dissertation.

Environmental Management (Doctor)

Foster practitioners with high level of specialized management skills, broad knowledge and problem-solving skills who can work towards the solution of global and regional environmental problems.

Global Environmental Studies (Doctor)

Cultivate internationally active researchers addressing regional and global environmental problems with interdisciplinary perspectives and methodologies.

Educational Goal

Completion of Doctoral program is certified based on whether the dissertation contributes to solving global and regional environmental problems, and whether the applicant acquires a high level of professional skills and logical communication capabilities.

Criteria for Doctor's Degree

Dissertation Submission, Defense, and Review **Courses and Seminars & 2nd Progress Report** (Advanced Exercise and Seminars in Global Environmental Studies IIa)	Progress Report	**Dissertation Submission, Defense, and Review** **Courses and Seminars & 2nd Progress Report** (Advanced Exercise and Seminars in Global Environmental Studies Ⅲa, Ⅲb) **D3**
	Progress Report	
Internship (>5 months) & Report (Internship) **Courses and Seminars** (Advanced Exercise and Seminars in Global Environmental Studies IIa)	Progress Report	**Courses and Seminars** (Advanced Exercise and Seminars in Global Environmental Studies IIa, IIb) **D2**
	Progress Report	
Courses and Seminars, 1st Progress Report (Advanced Exercise and Seminars in Global Environmental Studies Ia, Ib)	Progress Report (report every 6 months)	**Courses and Seminars, 1st Progress Report** (Advanced Exercise and Seminars in Global Environmental Studies Ia, Ib) **D1**

Admission

Master's Program in Environmental Management

Educational Goal

Foster practitioners with in-depth knowledge and problem solving skills and a broad international perspective, in order to solve regional and global environmental problems.

Criteria for Master's Degree

Conferment of master's degree is based on whether the thesis contributes to solving global environmental problems and regional environmental problems, and whether the applicant acquires sufficient knowledge, expertise, and logical communication skills.

M2

Master's Thesis Submission, Presentation, and Thesis Review
Research for Master's Thesis (Environmental Management Seminar (Compulsory))
Internship Report (Internship II (Compulsory))

M1

Internship (more than 3 months) (Internship I (Compulsory))
Coursework
1. Basics in Global Environmental Studies (Compulsory); 2. Environmental Management Seminar A(Compulsory);
3. Environmental Management Seminar B (Compulsory); 4. Basics in Environmental Management;
5. other lectures in Environmental Management

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

Serika Yuto
Master's Program, Environmental Marketing Management

The Graduate School of Global Environmental Studies is a truly unique school.

Courses in the theoretical foundations of global environmental studies cover fundamental knowledge relating to the environment from all disciplinary angles, including humanities and social sciences, and natural sciences, agriculture, and engineering. They also offer many opportunities for group work and presentations, helping us to master this knowledge in depth. Activities such as seminars and fieldwork offer access to a broad range of knowledge domains and enable interdisciplinary learning. The experience of interacting with students and faculty members from a variety of fields in a cosmopolitan environment is sure to prove useful in the future when I need to engage with people of diverse backgrounds in international society.

In addition to the diversity of classes, one of the attractions of the School's curriculum is the long-term internship training program. Gaining experience in actual workplaces enables us to develop more practical capabilities in environmental management. I undertook a four-month internship in a recycled water project in Itoman City, Okinawa Prefecture. I conducted research on consumer preferences in relation to the use of recycled water in agriculture, using questionnaires, interviews, and retail trials of produce grown using recycled water, as well as working pro-actively to cultivate proper understanding of recycled water. Interacting with and hearing the opinions of people in a variety of positions during this internship provided motivation for my own research. Furthermore, this training afforded me valuable experiences that I could never have gained through regular study, and has proven to be very fruitful. I was also blessed with many delightful encounters beyond my research activities, and spent an enormously fulfilling four months.

The one year that has passed since I entered the School of Global Environmental Studies has been an extremely productive time in my life, filled with varied classes, fieldwork, and internship training. I believe that the learning and other experiences in this School are sure to help you unlock your individual potential. Before setting out into wider society, please do consider spending some time in this wonderful environment—one which you will never find elsewhere.

VOICE 2

Ricelli Laplace
Master's student, Global Environmental Architecture

Different from others graduate schools, GSGES offers students the opportunity to go beyond their comfort zone and study field to engage in different activities from a large range of studies. I think it's crucial for every researcher and professional to learn in an international and varied environment, where we can learn and share knowledge and culture of our own country and many others. At GSGES we have the opportunity to meet people from different backgrounds, with different viewpoints and culture, this way we all learn how to work together building a consensus to conduct projects in small and global scale. This experience made me grow professionally but also in the personal level, I think I became much more mature and my view of the world drastically changed.

Beyond that, one thing the school offers that is amazing is the internship program. This helps us to put in practice things we learned during classes and decreases the gap between theory and practical work. I spent 3 months in Indonesia for my internship, and there I had the opportunity to try a completely different culture and lifestyle, as well as do my research, field surveys and make many friends and new connections. More than a working experience, this is an opportunity to grow as a person and establish relationships that can make a huge difference in your future.

The program at GSGES is quite free and pushes self study. It's good for those who want to pursue their own research and try new things. During classes we always have the opportunity to show our own vision and try to solve problems by ourselves. I like the fact that I had a taste of many different fields of study and had the freedom to choose which ones I wanted to dig deeper. It's a good place to study if you have a big curiosity about the world, about yourself and about environmental problems and solutions in different countries, but beyond that, is a good place to find out what difference each one of us can make.

Voices from Graduate Students

Graduated from
Master's Program (2012)

Mizuki HOSOKAI

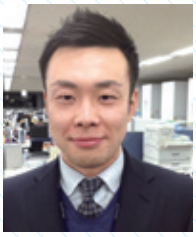
Tsushima City

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

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

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

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



Graduated from
Master's Program (2012)

Tomoharu YAMAUCHI

Itochu Corporation

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

Graduated from
Doctoral Program (2013)

Noralene M. UY

Independent Consultant

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

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

Graduated from
Master's Program (2007)

Aya OKADA

Japan International Cooperation Agency (JICA)

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

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

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

Sansai Gakurin

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

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

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

2) Activities designed to promote research

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

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

3) Activities designed to support education

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

Recent Collaborating Institutions for Internship Study

Private enterprise

- Panasonic Corporation
- NIPPON KOEI CO., LTD.
- Obayashi Corporation
- LAGO.CO.,LTD
- DENSO CORPORATION
- Kao Corporation
- CHUGAI TECHNOS CORPORATION
- TORAY TECHNO CO.,LTD
- ASIA AIR SUVEY CO.,LTD.
- Environmental Assessment Center CO.,LTD
- Japan Promotion center for Advanced Technology(JPAT)
- Sumitomo Osaka Cement Co.,Ltd.
- KUBOTA Environmental Service Co., Ltd
- IBM Japan Services Company Ltd.
- AMITA Institute for Sustainabale Economies
- SUMITOMO BAKELITE CO.,LTD
- aoi CORPORATION

country/the local government

- Ministry of the Environment
- Tsushima City
- Tokyo Metropolitan Government
- Environmental Policy Bureau, City of Kyoto
- Maiko high school,Kobe
- Lake Biwa Environmental Research Institute
- Kyoto City Waterworks Bureau
- National Institute of Health Sciences

NPO/NGO、etc.

- Japan Center for a Sustainable Environment and Sociaty (JACSES)
- Institute for Sustainable Energy Policies
- Egao-Tsunagete
- KIKO Network
- Satoyama Net AYABE
- See-D Committee

Various corporation / research organizations

- Research Institute for Humanity and Nature (RIHN)
- Earthquake Disaster Mitigation Research Center (EDM) National Research Institute for Earth Science and Disaster Prevention (NIED)
- Global Environmental Forum, under the JICA Grass-roots Project
- Japan International Cooperation Agency (JICA)
- National Institute of Population and Social Security Research (IPSS)
- National Institute for Environmental Studies
- World Wide Fund for Nature Japan
- Nippon Intemation Cooperation for Community Developmen (NICCO)

international organization /overseas

- Institute for the Advanced Study of Sustainability (UNU-IAS)
- Tallinn University
- University of Stirling
- Stockholm Environment InstituteAsia Center
- UNESCO Hanoi
- Beijing Normal University
- University of Madras
- Danag University of Technology (DUT)
- Hanoi University of Science and Technology
- Department of Architecture,Hue College of Sciences
- State of California Department of Fish and Game
- JETRO DUSSELDORF
- University College Cork.
- National Parks Board, Singapore
- Danang University of Technology(DUT)
- University of Caen
- University of the South Pacific
- Kasetsart University
- Department of Civil Engineering, Burapha University
- United Nations Industrial Development Organization
- Mahidol University,Thailand
- Tsinghua University

Institutions for Internship Study in the World

After Graduation

Master's Program in Environmental Management

Private Sector

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

Ministry

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

Local Government

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

Independent administrative agency/Research Institution

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

NPO/NGO

- Institute for Sustainable Energy Policies
- Kiko Network

Corporate Organization

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

Others

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

Overseas

- Shenzhen City, China
- Cathay Pacific Airways
- Energy Natura
- Hare & Tortoise
- Offshore
- Pacific Express
- Procter & Gamble Far East, Inc

Ph.D Program

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

Doctoral Program in Environmental Management

Overseas

- Lloyd's Register Quality Assurance Limited
- SEEDS Asia
- Korea Institute of Construction Technology
- United Nations Environment Programme
- The United Nations office for Disaster Risk Reduction
- United Nations University

University/Research Institute

- Kyoto University
- Research Institute for Humanity and Nature

Private

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

Ministry

- Ministry of Foreign Affairs of Japan

Doctoral Program in Global Environmental Studies

Overseas

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

University/Research Institute

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

Private

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

Others

- Shimin Cooperation Law Office

List of Academic Staff

Department of Global Ecology

Global Environmental Policy
Professor Makoto USAMI

Environmental Economics
Professor Toru MOROTOMI

Global Ecological Economics
Associate Professor Akihisa MORI
Project Assistant Professor Soyoung KIM

Sustainable Rural Development
Professor Satoshi HOSHINO
Assistant Professor Kenichirou ONITSUKA

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

Socio-Cultural Symbiosis
Professor Wataru SANO
Associate Professor Ayako IWATANI

Environmental Marketing Management
Associate Professor Akira YOSHINO

Ontology of Environment and Technology
Professor Junji SATO

Environmental Education
Associate Professor Jane SINGER
Associate Professor Misuzu ASARI

Department of Technology and Ecology

Environmentally-friendly Industries for Sustainable Development
Professor Shigeo FUJII
Associate Professor Shuhei TANAKA
Assistant Professor Hidenori HARADA

Environmental Infrastructure Engineering
Professor Takeshi KATSUMI
Associate Professor Toru INUI
Assistant Professor Atsushi TAKAI

Global Environmental Architecture
Professor Kenji OKAZAKI
Associate Professor Hirohide KOBAYASHI
Assistant Professor Chiho OCHIAI

Environmental Biotechnology
Professor Hideaki MIYASHITA
Associate Professor Tohru TSUCHIYA
Assistant Professor Ryoma KAMIKAWA

Landscape Ecology and Planning
Professor Shozo SHIBATA
Associate Professor Katsue FUKAMACHI
Assistant Professor Junichi IMANISHI

Environmentally-Friendly Energy Conversion
Professor Takeshi ABE
Associate Professor Tomokazu FUKUTSUKA
Assistant Professor Kohei MIYAZAKI

Department of Natural Resources

Regional Planning
Professor Tsugihiro WATANABE
Associate Professor Izuru SAIZEN
Assistant Professor Narumasa TSUTSUMIDA

Urban Infrastructure Engineering
Professor Kunitomo SUGIURA
Associate Professor Eiji HARADA
Assistant Professor Tomohiro TANAKA

Atmospheric Chemistry
Professor Yoshizumi KAJII
Assistant Professor Yosuke SAKAMOTO

Ecosystem Production and Dynamics
Professor Akira OSAWA
Associate Professor Naoki OKADA
Assistant Professor Masako DANNOURA

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

Aquatic Environmental Biology
Professor Yoh YAMASHITA
Assistant Professor Keita SUZUKI

Project

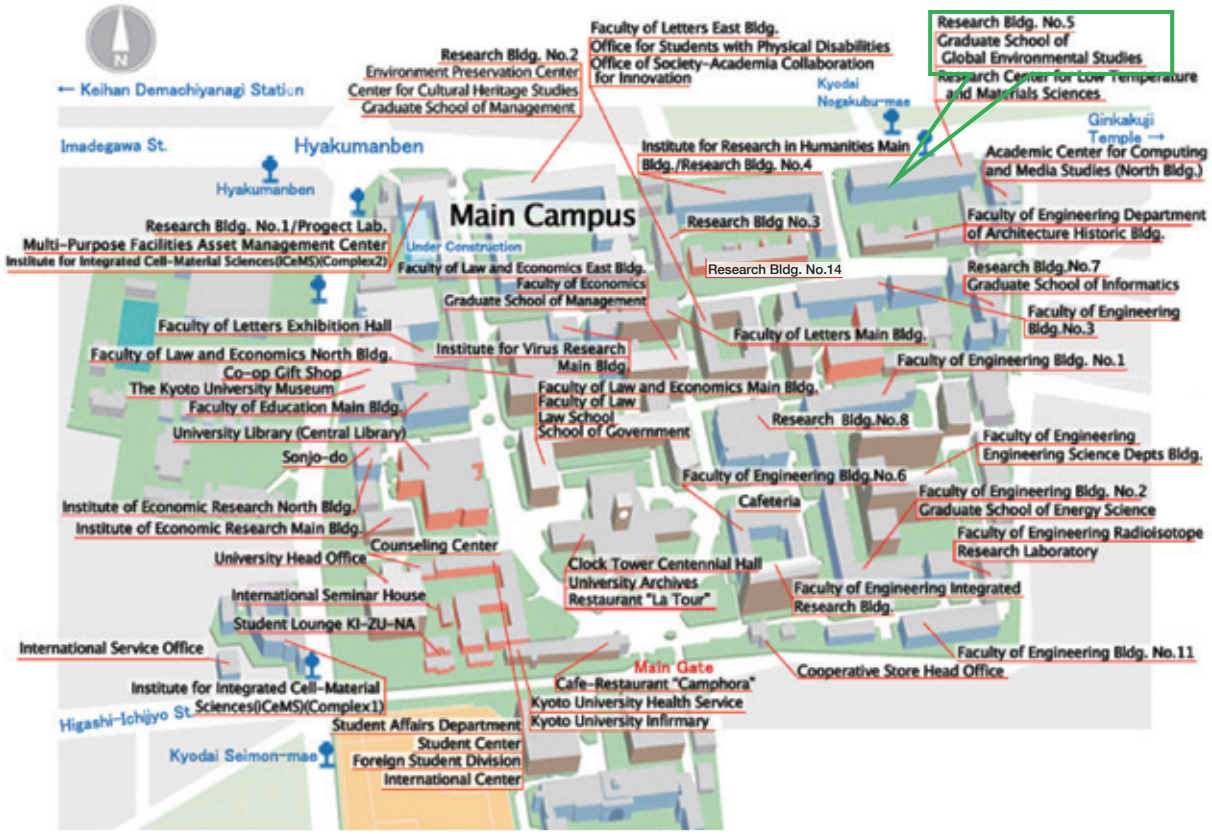
Environmental Innovator Program (EIP) -Cultivating Environmental Leaders across ASEAN Region-
Project Associate Professor Suwanna Kitpati BOONTANON
Project Assistant Professor Yuji SUZUKI

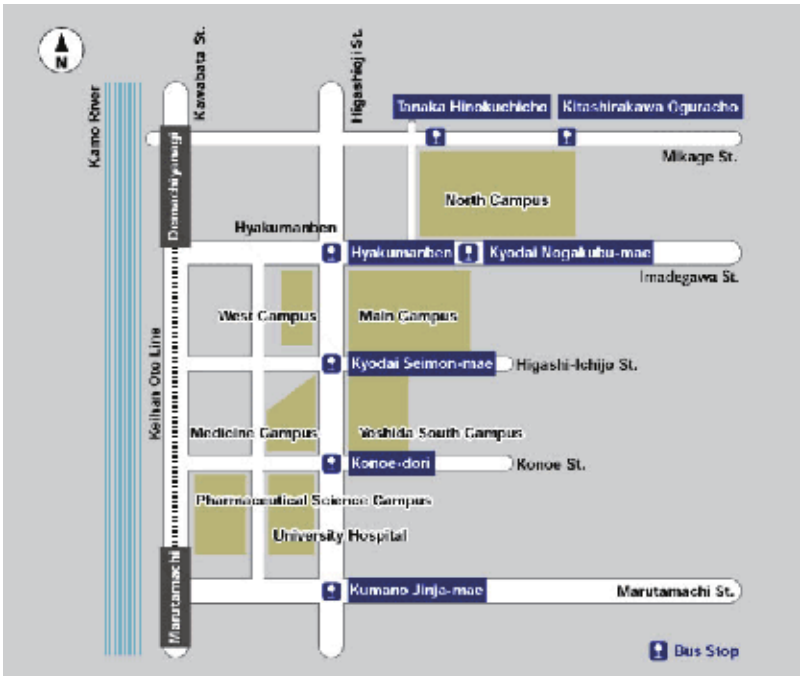
Top Global University Project “Japan Gateway: Kyoto University Top Global Program” (JGP) Environmental Studies
Project Assistant Professor Yuki OKAMOTO

Research Unit for Development of Global Sustainability
Project Assistant Professor Soyoung KIM

Graduate School of Global Environmental Studies (GSGES) Location Map

<Yoshida main campus>





Graduate School of Global Environmental Studies
GUIDEBOOK 2017

地球環境学堂・地球環境学舎・三才学林　ガイドブック 2017

issued : April, 2017

Graduate School of Global Environmental Studies
Yoshida-Honmachi, Sakyo-ku, Kyoto, 606-8501, JAPAN
TEL：075-753-9167

http://www2.ges.kyoto-u.ac.jp/