



Ibaraki  
University

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**ICAS**

INSTITUTE FOR GLOBAL CHANGE  
ADAPTATION SCIENCE

Adapt to climate change  
Create a safe and prosperous society  
Realize sustainability

# “Living with Global Warming”

Climate change has become a fact of life in the 21st century. Although mitigation measures to reduce greenhouse gas emissions, such as CO<sub>2</sub>, are important, we cannot stop global warming completely. What we need to do is to adapt to the changing environment. We also need dialogue with and wisdom from the scientists who have been studying this problem. We all need to work together to create a sustainable society that does not leave anyone behind.

The Institute for Global Change Adaptation Science (ICAS) at Ibaraki University was founded in 2006 as the growing need for new scientific efforts to pursue sustainable earth, social, and human systems became apparent. The Institute gathers researchers across various fields from all colleges and centers at the University. From its inception, and as reflected by the inclusion of “adaptation” in its name, the ICAS has been supporting local governments and others that are empowered to respond according to the Climate Change Adaptation Act enacted in 2018.

## Collaboration with organizations outside the University

We are collaborating with the General Incorporated Association of Sustainability Science Consortium (SSC) and the Vietnam-Japan University (VJU) of the Vietnam National University and cooperating with organizations inside and outside the university. Through these partnerships, we are actively developing interdisciplinary and transdisciplinary research and educational programs to explore various measures, such as mitigation of and adaptation to climate change, disaster prevention, and disaster risk reduction. For example, in collaboration with the National Institute of Japanese Literature, we are working on the creation of "Disaster Prevention Studies using Historical Documents" to consider future disaster prevention based on history.

## Passing a reliable baton to future generations

Generally, humans live for 100 years at most. However, we extend our influence and further our evolution by leaving offspring. ICAS staff members think not only of our present lives, but also those of future generations. We are making efforts and decisions now to deliver a better world to future generations.

ICAS is working on the construction of a sustainable society!

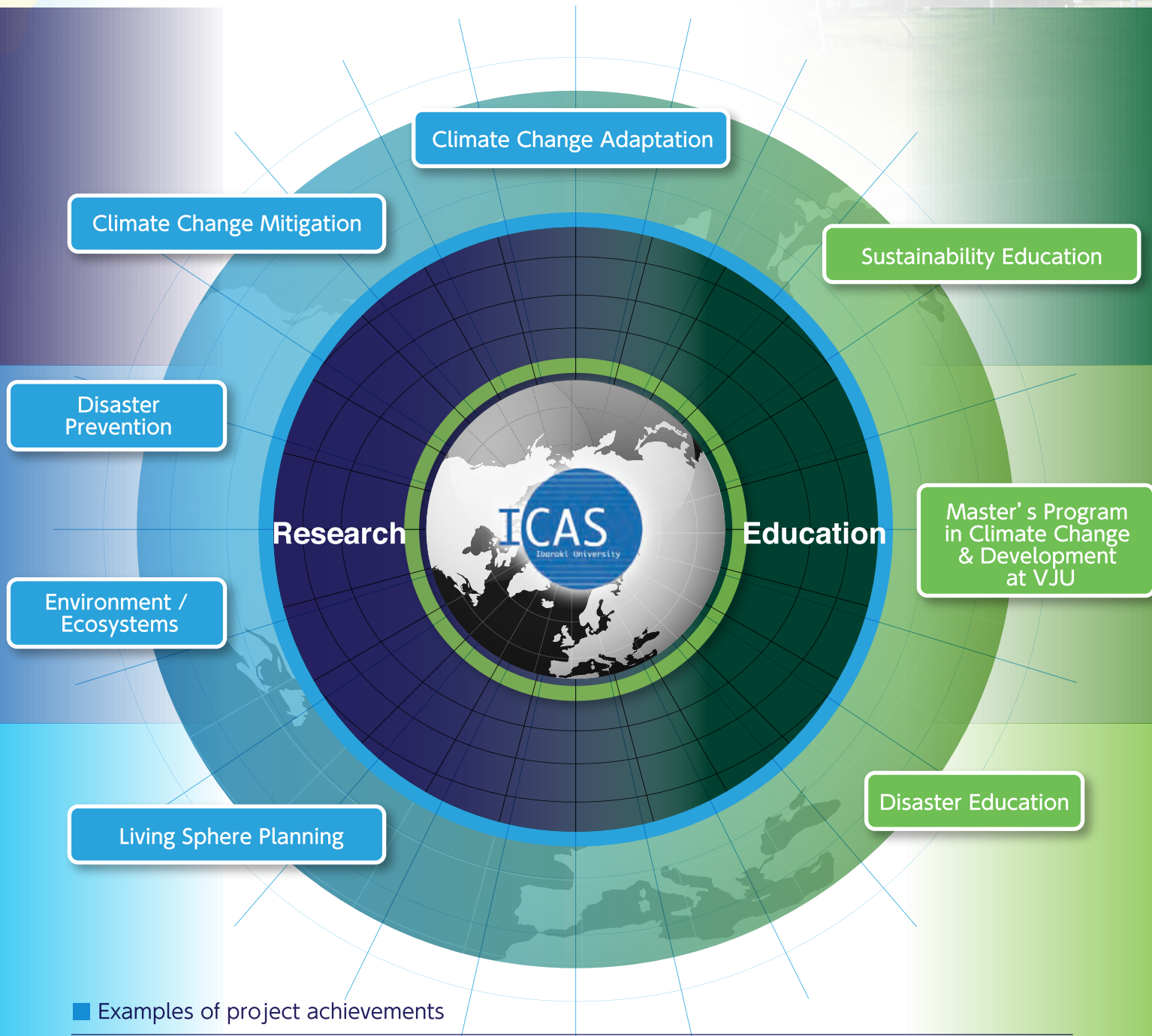
# Features of ICAS

Co-evolution of research and education

Benefitting from people's wisdom / creating dialogues within science

Co-design with citizens / social implementation

— Transdisciplinary collaboration —



## Examples of project achievements

**[Ministry of the Environment]** S-14: Vulnerability assessment and cost-benefit analysis of adaptation to climate change in coastal areas (2015-2019)

**[Ministry of the Environment]** Vietnam initiative: Support for adaptation planning in Vietnam (2017-)

**[Ministry of Education, Culture, Sports, Science and Technology]** SI-CAT: Agricultural impact and adaptation to climate change (2015-2019)

**[National Institute of Japanese Literature]** Collaborative research: Creation of new research fields for disaster reduction and climate change adaptation utilizing historical materials (2017-2019)

**[Ibaraki Town]** Regional collaboration: Local cuisine and tsuto-tofu project (2014-2017)

**[NEXCO EAST Technology Research Grant]** Kudzu project: A future-oriented approach in greenspace management of expressway slopes in collaboration with academia, industry, and residents (2018-)

# Prediction of climate change impacts and adaptation technology and policy



A Church affected by coastal erosion in Vietnam

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## Earth Systems Research

Phenomena and mechanisms that contribute to climate change  
Development of scientific methods for adaptation and mitigation

We are leveraging engineering and information technologies to assess climate change impacts in various areas, and develop adaptation and mitigation technologies. In this way, we can develop approaches to adapt to and mitigate climate change and pursue research topics that can support a sustainable society.



An inspection of an Indonesian farm

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## Agriculture / Ecosystems Research

Exploring the ways agriculture can adapt to climate change  
Discovering the functions of ecosystems to conserve them

We are developing land use, agricultural, and farming systems that are sustainable under climate change. We are also researching adaptive cultivation technology, restoration of vegetation in ecosystems, and conservation of soil and water in natural material circulation systems.



A school affected by Tsunami in Thailand

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## Human / Social Systems Research

Planning for living spheres  
Development of policies for safety and security

We are researching how to realize social equity by understanding the current state of social inequality that is likely to manifest itself during major disasters. This includes research on climate security in countries vulnerable to climate change and making plans for sustainable city living spheres.

# Research

# Providing training with “sustainability” perspective



## Graduate Program on Sustainability Science

Graduate students are participating from all four graduate schools at Ibaraki University: Graduate School of Humanities and Social Sciences, Education, Science and Technology, and Agriculture

### Core subjects

- Frontiers of sustainability science (remote lecture in English with SSC participating universities)
- Global environmental systems I · II
- Sustainable social systems I · II
- Human systems I · II

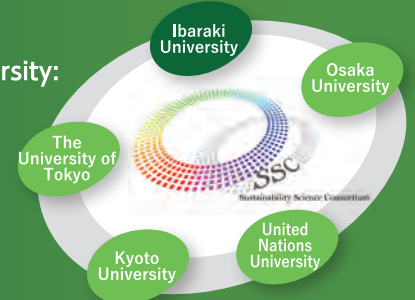
### Practical subjects

- International fieldwork in sustainability (Thailand / Vietnam)
- International fieldwork in sustainability (Ibaraki town / Joso city)
- Seminar in developing facilitation capacity I · II
- Sustainability internship

### Specialized subjects

- Subjects designated by each graduate school

■ SSC participating universities



※SSC: General Incorporated Association Sustainability Science Consortium

## Student Sustainability Forum

Exchange of research presentations among different colleges and graduate schools

At the Student Sustainability Forum held annually, students, faculty, and staff from the Hitachi, Mito, and Ami campuses, which rarely combine to have such exchanges, usually come together for a poster presentation. Participants benefit from new discoveries and learning opportunities while interacting with people from different fields and academic societies.



## Master's program at Vietnam Japan University, VNU (VJU)

Developing the Master's program in Climate Change & Development(MCCD) at VJU

The MCCD was newly established at VJU in September 2018, with aiming at developing domestic and international human resources that can play an active role by applying advanced knowledge and skills to climate change issues. Ibaraki University has cooperated in developing and managing this program.

### Master's Programs

- Climate Change & Development
- Area Studies
- Public Policy
- Business Administration
- Nanotechnology
- Infrastructure Engineering
- Environmental Engineering

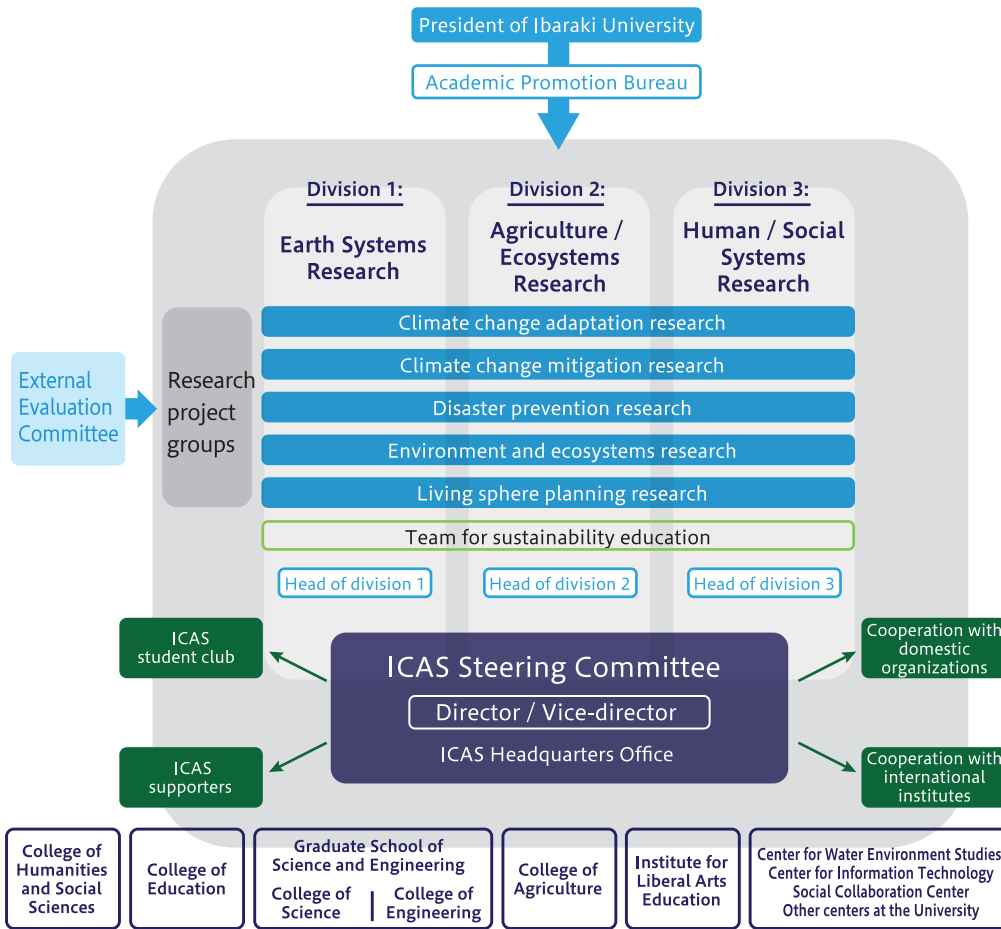
### Coordinating Universities

- Ibaraki University
- The University of Tokyo
- University of Tsukuba
- Yokohama National University
- Osaka University
- The University of Tokyo
- Ritsumeikan University / The University of Tokyo



# Education

## Organization and management of ICAS



## Publications

“Create the Sustainability Science” (Shinyosha, 2008)  
MIMURA Nobuo, ITO Tetsuji, TAMURA Makoto, & SATO Yoshinori, eds.

“Towards Sustainable World from Ibaraki University”  
(Ibaraki-shimbunsha, 2010)  
Ibaraki University ICAS, ed.

“Sustainability Science of Post-Earthquake Society:  
Toward a New Collaboration of Regional and University”  
(International academic publishing, 2014)  
TAMURA Makoto, ITO Tetsuji, KIMURA Kisou, KATO Sadahisa,  
& SAKAGAMI Nobuo, eds. / MIMURA Nobuo, supervising ed.

“Designing Climate Change Adaptation” (Cross media marketing, 2015)  
OTA Shunji, TAKEWAKA Satoshi, & KAMEI Masatoshi, eds. /  
MIMURA Nobuo, supervising ed.



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