

Sustainability Issues in Higher Education: Whole institution approach

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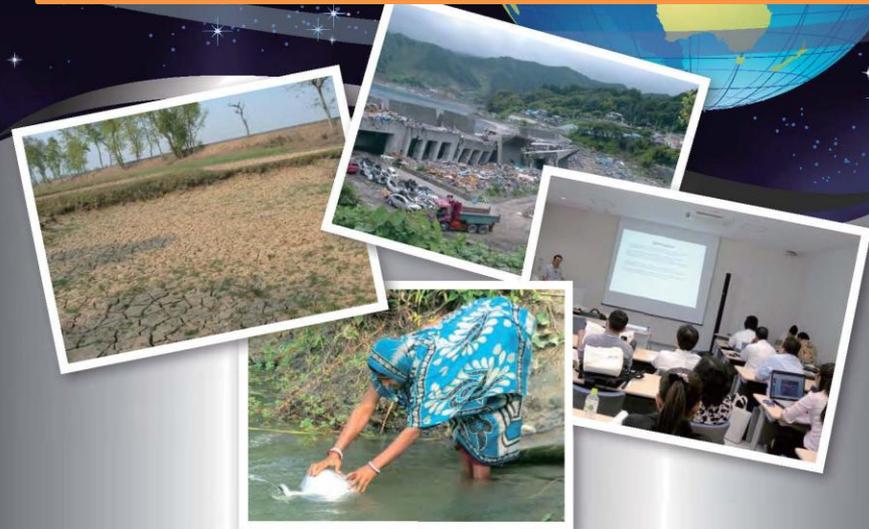
Two examples

- Specialized higher education program
- Campus wise sustainability activities



**Inter-Graduate School Program
for Sustainable Development and Survivable Societies
(Global Survivability Studies Program)**

**9 graduate schools,
3 research institutions**



**京都大学
KYOTO UNIVERSITY**

Program for Leading Graduate Schools, MEXT
In the multidisciplinary field of Safety and Security



Kyoto University *Envi
Grad*



**Graduate schools and Research Institutes
involved in the Inter-Graduate School Unit for
Sustainable Development and Survivable Societies**

Graduate School of Education	All departments (Department of Education, Department of Clinical Education)
Graduate School of Economics	Department of Economics
Graduate School of Science	Division of Earth and Planetary Sciences
Graduate School of Medicine	Department of Medicine and Medical Science, School of Public Health
Graduate School of Engineering	Department of Civil and Earth Resources Engineering, Department of Urban Management, Department of Environmental Engineering, Department of Architecture and Architectural Engineering, Department of Mechanical Engineering and Science
Graduate School of Agriculture	All departments (Division of Agronomy and Horticultural Science, Division of Forest and Biomaterials Science, Division of Applied Life Sciences, Division of Applied Biosciences, Division of Environmental Science and Technology, Division of Natural Resource Economics, Division of Food Science and Biotechnology)
Graduate School of Asian and African Area Studies	All departments (Division of Southeast Asian Area Studies, Division of African Area Studies, Division of Global Area Studies)
Graduate School of Informatics	Department of Social Informatics, Department of Communications and Computer Engineering
Graduate School of Global Environmental Studies	All departments (Doctorate Program in Global Environmental Studies, Doctorate Program in Environmental Management)
Disaster Prevention Research Institute	
Research Institute for Sustainable Humanosphere	
Center for South east Asian Studies	

GSS

Global Survivability Studies

About the Program for Leading Graduate Schools

The Program for Leading Graduate Schools aims at mentoring talented students into future leaders, armed with a broad view and creative thinking, active globally in industry, academia and government. In order to do so, the Program for Leading Graduate Schools mobilizes high-level educators and students and the participation of industry, academia and government, supports a radical reform of graduate education that develops interdisciplinary world-class 5-year graduate programs, and promotes the development of graduate schools befitting their status of highest educational institution. (From the application guidelines for the Program for Leading Graduate Schools, 2011)

Contact

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Center for the Promotion of Interdisciplinary Education and Research
Inter-Graduate School Unit for Sustainable Development and Survivable Societies

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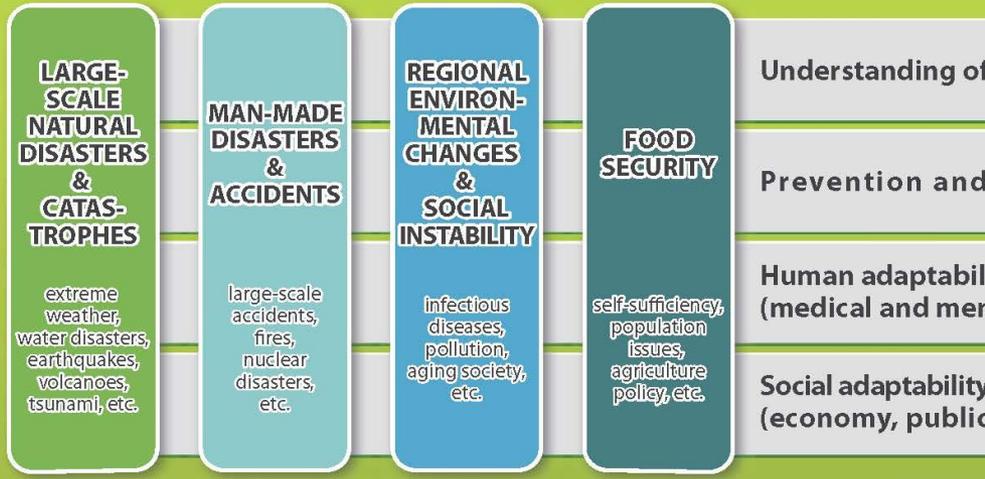
"Leading Graduate School (Super Doctor) " Educational Program in Global Survivability Studies

Program characteristics

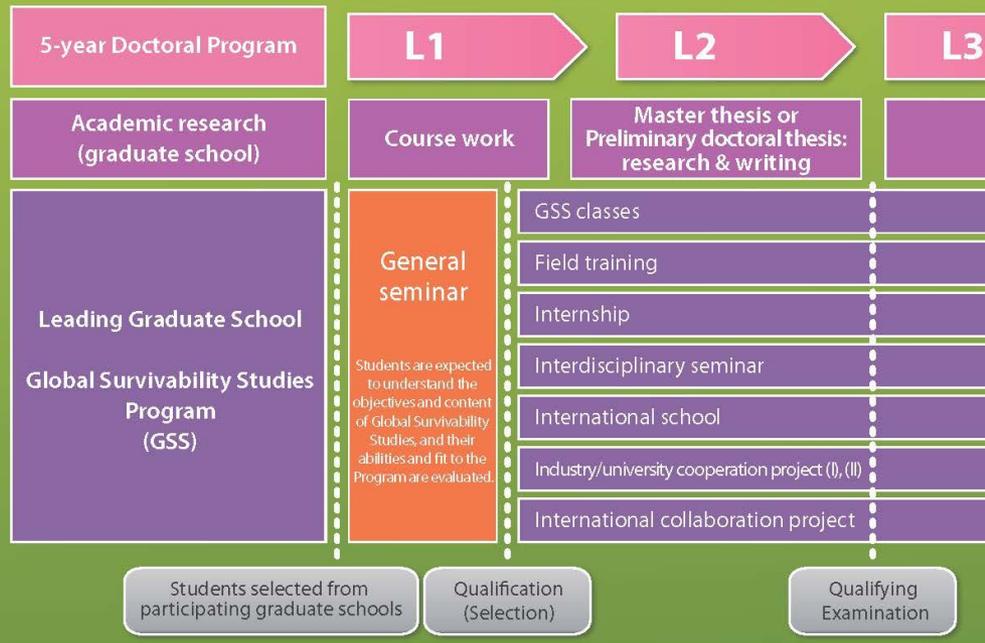
In recent years, our global society has been experiencing a surge of large-scale natural disasters, sudden man-made disasters and accidents, growing regional environmental changes such as environmental degradation and infectious diseases, food security issues. In this program, 9 graduate schools and 3 research institutes from Kyoto University join forces to develop a new multidisciplinary field called Global Survivability Studies (GSS), and develop global experts who can contribute to social safety and security.



Scope of Global Survivability Studies in the field of



Global Survivability Studies Program (GSS) 5-year



Kyoto University *Envi Grad*

How to enroll in the Global Survivability Studies Program (GSS) ?

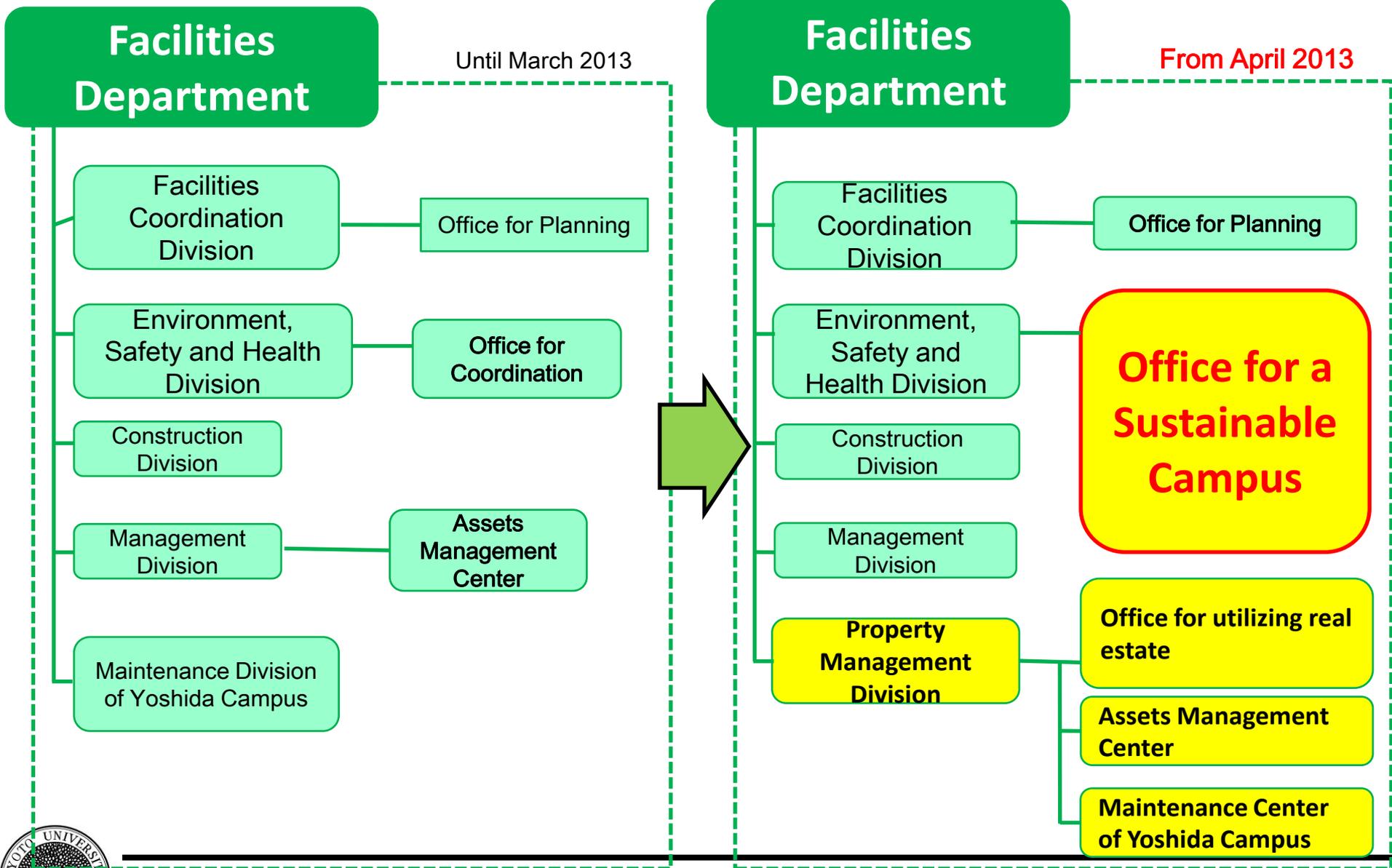
Students who have graduated from a Japanese university (4-year undergraduate program), or who have an equivalent qualification, and who are enrolled in any of the graduate schools and departments involved in the program can apply. Nationality, gender and age

Key learning

- Needs **regulatory reforms** in the university [since different graduate school has its own criteria for degrees]
- Needs a **strong incentives** to the students and faculty members [to provide scholarship, research grant etc.]



【Establishment of the Office for a Sustainable Campus】



Background of this system

- Energy consumption and CO₂ emission **increased by 93%** in 2006 in comparison with the level in 1990 because of the increase of graduate students and the upgrade of facilities and experimental devices.
- Carbon dioxide emission of Kyoto University is **the fourth largest place** in Kyoto-city.
- Cost of energy consumption of Kyoto university is **about 35 million US dollars per year**.
- Energy saving measures have been performed in just faculty departments only, therefore **an university-wide action plan and its implementation are needed**.



○April 2, 2007 We created "**Energy Saving Policy of Kyoto University**"

- Each faculty department should reduce energy and greenhouse gas per unit area by 1% a year.
- Each faculty department should submit a report regarding the result of the reduction, and the department has to explain the reasons officially if it wasn't able to achieve 1% reduction.

○January 21, 2008 We created "**Tax System for Campus Sustainability of Kyoto University**"

Tax in 2006

	Target for charging	Unit	Unit price (US Dollar)	Tax for unit price (\$)	Annual usage (in 2006)	Total amount of Tax (US Dollar)	Tax rate
Faculty Department	Electricity	kwh	0.105	0.005	178,000,000	890,000	4.76%
	Gas	m ³	0.400	0.015	12,500,000	187,500	3.75%
	Water	m ³	2.301	0.100	1,480,000	148,000	4.35%
Subtotal						1,225,500	
Subsidy from administrative bureau						1,200,000	
Total						2,425,500	

(1 USdollar=100yen)

Renovation from Fire-tube packaged boiler to Once-through packaged boiler

- Reduction of primary energy : **15,951 GJ/year**
- Reduction of CO₂ : **801.2 t-CO₂/year**
- Reduction of energy cost : **270,170 USD/year**
- Rate of reduction : **20% down**



fire-tube packaged boiler(10t) 1unit



Once-through packaged boiler(2.5t) 4unit

Introduction of Photovoltaic power generation

- Reduction of primary energy : **65 GJ/year**
- Reduction of CO₂ : **1.8 t-CO₂/year**
- Reduction of energy cost : **970 USD/year**



iCeMS (5.6kW)



Faculty of Education (3.7kW)

Introduction of Inverter of pump

- Reduction of primary energy : **466 GJ/year**
- Reduction of CO₂ : **134 t-CO₂/year**
- Reduction of energy cost : **6,970 USD/year**
- Rate of reduction : **54% down**



Environmental Education Laboratory
The cool/warm water pump
Graduate School of Global Environmental Studies
Inverter control machine

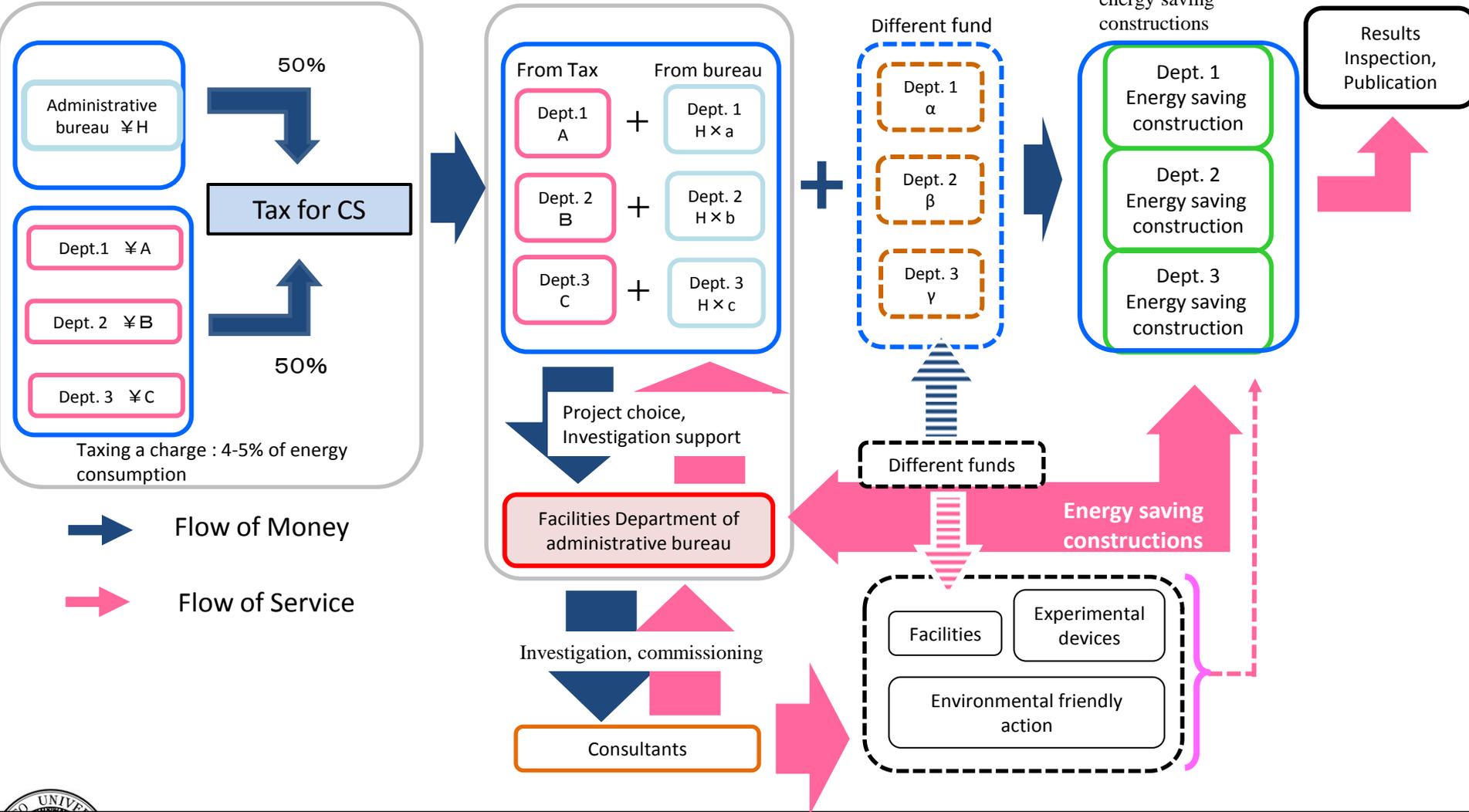
Flowchart of Tax System for Campus Sustainability

Financial funds

Distribution to department

Implementation of energy saving constructions

Results Inspection, Publication

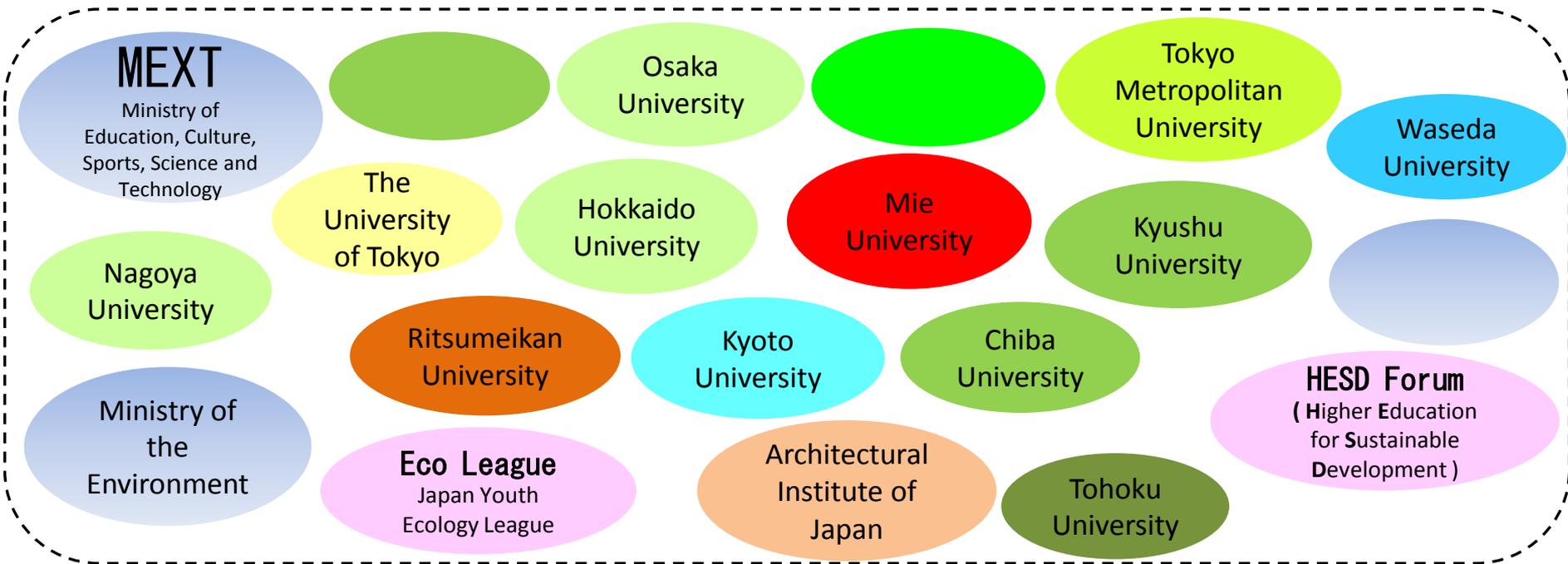


Key activities

- **Governance** issues
 - Eco-code Sustainable Handbook
 - Messages from President and City Mayor
 - List of active student organizations focused on sustainability
 - Promote eco-appliances and tax return system
 - Campus sustainability guidebook [by AY 2014]
- **Education** issues
 - Sustainability literacy test
 - Environmental education course for any undergraduate students
- **Awareness** issues
 - Sustainability week [June 24 -30 2013], Sustainability month [June 2014]
 - Student project competition and fund innovative ideas



Campus Sustainability Network [CAS-NET Japan]



Although each organization makes characteristic efforts on campus sustainability, cross-cutting view-exchanges including assessment method are not active.

**Necessity for making network on Sustainable Campus
in Japan**

It is imperative to establish an organization such as AASHE and EAUC in Japan!!



Kyoto University

Environmental Education Laboratory
Graduate School of Global Environmental Studies

CAS-Net JAPAN

(Campus Sustainability Network in Japan)

Themes

- Administration and planning
- Facilities and operation
- Change management
- Engaging students
- Collaboration and partnership
- Assessment
- Awarding system
- International network
- SLT

Linking **Governance Education and Technology**