

# Human Resources Development for Environmental Rehabilitation in Asia

— Integration of Studies on the Establishment of a Sound Material-Cycle Society  
and Education for Sustainable Development (ESD) —

## Science For Asian Environment

GRADUATE SCHOOL OF ENVIRONMENTAL SCIENCE  
OKAYAMA UNIVERSITY

“Environmental science” is an academic discipline which requires comprehensive, composite, and interdisciplinary approaches. In order to accelerate its studies in this distinctive field, in April 2005 Okayama University gathered together various environmental studies in the fields of natural and social science, humanities, and medicine, which had previously been conducted separately at its other graduate schools of Humanities and Social Sciences, Natural Science and Technology, and Medicine, Dentistry, and Pharmaceutical Sciences, to establish a Graduate School of Environmental Science.

Our contemporary society is beset with a great number of environmental issues such as global warming, but those which may be successfully resolved through the efforts of a single country alone are few indeed. To solve these problems, international cooperation among many countries is essential. Often referred to as “the age of Asia,” the 21<sup>st</sup> century has seen the rapid development of many Asian economies, including China and India, while at the same time environmental loading originating in this region is increasing. To preserve the global environment for future generations, it has become urgent that Asian countries leave behind the 20<sup>th</sup>-century social model of “mass production, mass consumption, and mass disposal” and move on to establish a sustainable sound material-cycle society. The goal of the Graduate School of Environmental Science is to be a “education and research center of environmental science in Asia” through close collaboration and cooperation with other Asian countries.

### <Support Program for Improving Graduate School Education>

In our contemporary society, as science and technology advance, knowledge has become increasingly specialized and fractional, and global competition has intensified. Under such circumstances, the development of human resources who, with their profound insight and flexible practical skills, are able to cope with the challenges presented by new disciplines and rapid technological innovation is an urgent task. In recognition of this, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) of Japan has undertaken a series of drastic education reforms at graduate schools, which are playing a central role in the development of such human resources.

Beginning in 2007, Program for Enhancing Systematic Education in Graduate Schools aims to offer prioritized support to the best practices of methodic and systematic educational initiatives in master’s and doctor’s courses, which are responsible for the development of not only researchers but also specialists who contribute to society in industry and many other fields as well.

# 1. Program Objective

In many of Asia's developing countries, ongoing rapid economic development has increased waste production, and it is clear that the problem of waste disposal will only become more serious from now on. Meanwhile, global environmental issues such as resource depletion and global warming are becoming urgent in these developing countries as well. As a way of breaking through these issues, Japan has suggested the "creation of a sound material-cycle society." However, merely transferring sound material-cycle technologies is not enough to spread the concept of such a society, but it is important to design one that is customized to each community, based on a proper understanding of environmental awareness which is rooted in the society and culture of people in various countries.

For this Program, a "Special Course on Environmental Rehabilitation in Asia" has been established under the Graduate School of Environmental Science, with the goal of developing "human resources who are able to demonstrate international leadership in environmental rehabilitation in Asia" by implementing a curriculum which is designed to:

1. Raise awareness concerning issues of our contemporary material society and their solution, through education for sustainable development (ESD);
2. Let students systematically learn the theories of technology, planning, and policies for a sound material-cycle society; and
3. Help expand in stages the image of a sound material-cycle society from regional material-cycle to global material-cycle through project research.

# 2. Background of the Program

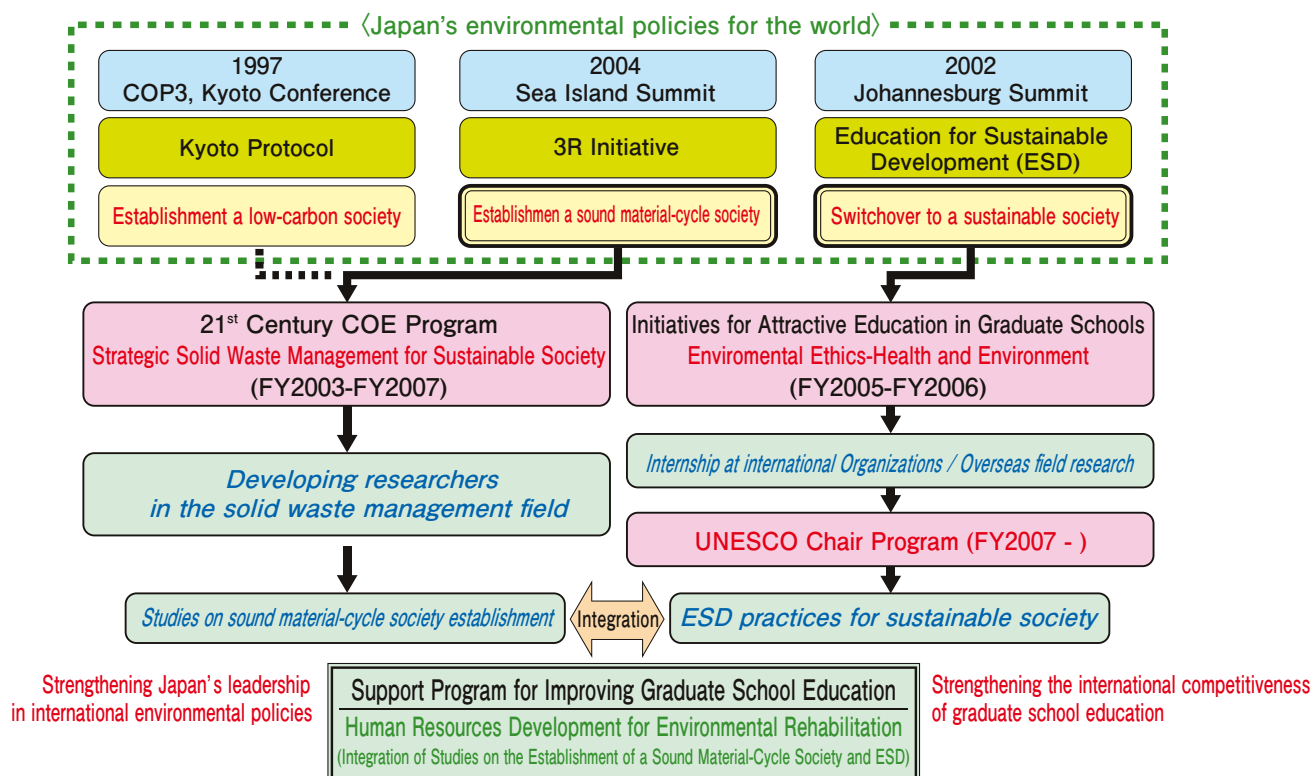
In FY2003, Okayama University's "Strategic Solid Waste Management for Sustainable Society" program was chosen as one of the 21<sup>st</sup> Century Center of Excellence (COE) Programs by MEXT, thus, at its Graduate School of Environmental Science, setting about the building of "studies on the creation of a sound material-cycle society," which systemized various academic fields related to solid waste management, while at the same time developing researchers with an advanced level of expertise in that area.

In FY2005, another Okayama University program, "Environmental Ethics-Health and Environment," was chosen as one of "Initiatives for Attractive Education in Graduate Schools" by MEXT, creating a program for developing environmental specialists who would be suitable for positions at international organizations through the introduction of overseas field research programs and internships at UN agencies.

In FY2007, yet another program, "Development of Environmental Specialists - Program for the Creation of an International ESD Center via the UNESCO Chair," was chosen as a Partnership Project under MEXT's special education and research grant. Accordingly, we have undertaken ESD projects based on the "UNESCO Chair in Research and Education for Sustainable Development at Okayama University," which was accredited by UNESCO in April 2007.

Through the integration of studies on the creation of a sound material-cycle society and ESD by tapping into the educational foundation the Graduate School of Environmental Science has fostered, the Program on the Human Resources Development for Environmental Rehabilitation in Asia aims at developing human resources who will play a key role as Asian countries set about the creation of a sound material-cycle society.

## Education and Research Center Development Project by the Graduate School of Environmental Science

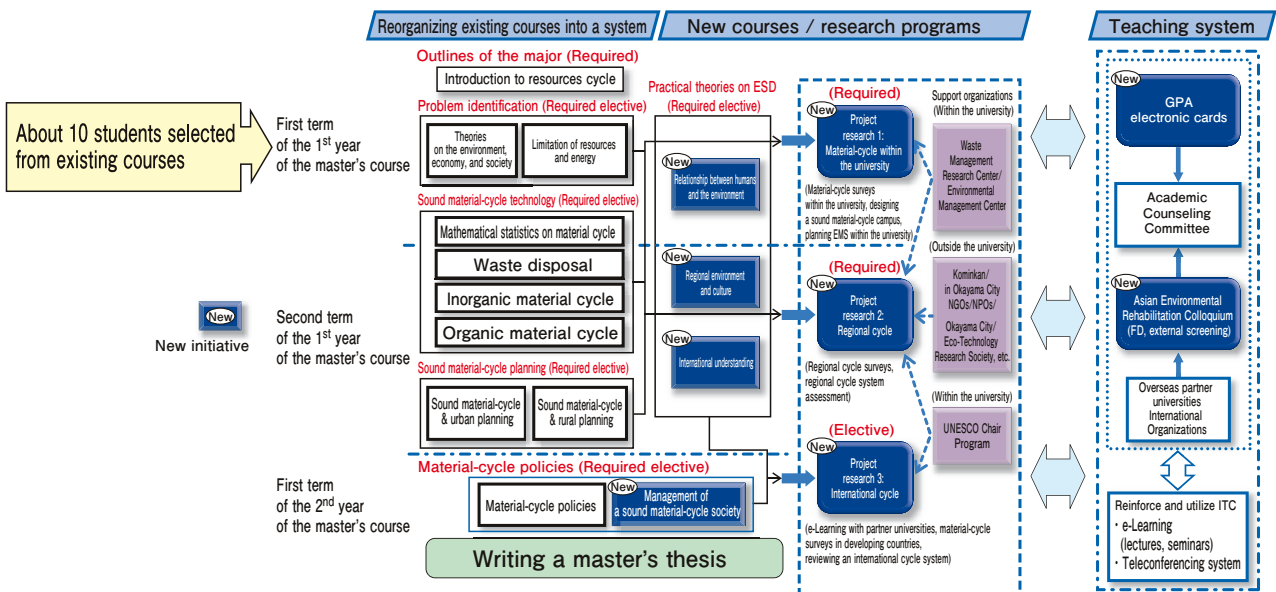


### 3. Curriculum for the “Special Course on Environmental Rehabilitation in Asia”

Development of environmental specialists capable of contributing to the creation of a sound material-cycle society requires the cultivation of practical capacities through which the relationship between the environment and society may be understood from an interdisciplinary and global perspective and which bring about socioeconomic changes, as well as the acquisition of expert knowledge and techniques concerning resources and energy cycle and solid waste management. The “Special Course on Environmental Rehabilitation in Asia” of the Program aims to foster the practical capacities needed to take the lead in making socioeconomic changes by incorporating into its curriculum ESD approaches and project research on university, community, and international levels, in addition to the Graduate School of Environmental Science’s interdisciplinary curriculum which mingles various environmental studies in the fields of science, humanities, and medicine.

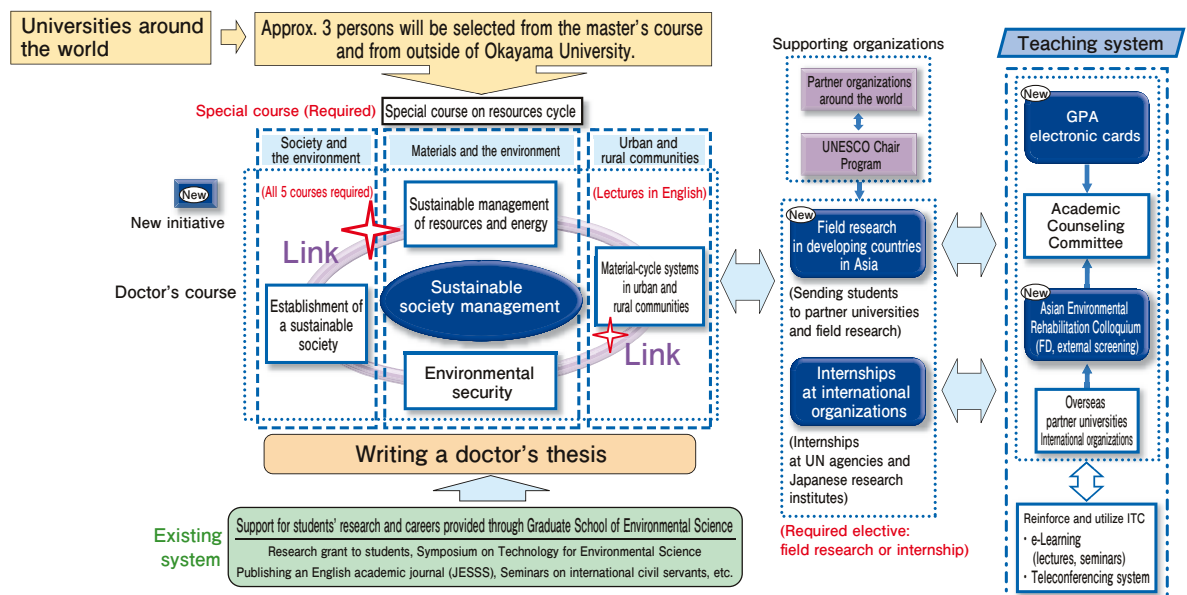
#### <Master’s Course>

The existing curriculum of the Graduate School of Environmental Science has been restructured from the perspective of creating a sound material-cycle society, which takes into account “economy and society, technology, and materials and resources” and the system of “problem identification and cycle analysis, technology, planning, and policies.” In addition to advanced knowledge and technology concerning the creation of a sound material-cycle society, a “Practical Theory on ESD” and “university, community, and international project research” have been introduced with the goal of assisting students in acquiring the practical capacities required to take the lead in making socioeconomic changes.



#### <Doctor’s Course>

The curriculum is designed as a circular structure with “studies on management of a sustainable society” as its core and “society and the environment,” “materials and the environment,” and “urban and rural communities” as parallel key themes. In the hopes of developing environmental specialists who can take the lead in the international arena with advanced capacities for practicing ESD, all courses include lectures in English, and a “field research in Asian developing countries” and “internships at international bodies” will be offered.





Overseas field research



ESD international symposium (2007)

## 4. Projects for the Creation of a Center of Education and Research by the Graduate School of Environmental Science

### ► MEXT's 21<sup>st</sup> Century COE Program : Strategic Solid Waste Management for Sustainable Society

Rapid economic development in the 20<sup>th</sup> century has left us with a legacy of mass production, mass consumption, and mass disposal, which has only served to aggravate global environmental issues such as environmental destruction, resources depletion, and global warming. Now, there is a loud cry for switchover to a "sound material-cycle society," where high value is placed on resources and the environment. By definition, a sound material-cycle society is a society where environmental preservation measures are taken in every field, resources are used without any waste, and systems and rules for environmental preservation are built into the market.

Conducted between FY2003 and FY2007, this Program pursued the three approaches of "development of planning tools," "development of a security system," and "development and accumulation of 3R technologies and appropriate treatment and disposal technologies," successfully building an international-standard center of research and education concerning strategic solid waste management for the creation of a sound material-cycle society.

URL <http://ambiente.okayama-u.ac.jp/sswmss/ssw.html>

### ► MEXT's "Initiatives for Attractive Education in Graduate Schools" Program : Environmental Ethics-Health and the Environment

True to its founding philosophy of integrating various environmental studies in the fields of science, literature, and medicine, the Graduate School of Environmental Science (est. 2005) places a unique focus on ecology and public health - studies of nature and humans themselves - at the Division of Biological and Human Environment, one of its three divisions.

For this Initiative (FY2005-FY2006), the curriculum of the Graduate School of Environmental Science served as a system for developing a curriculum for this center of environmental science in Asia where future staff at UN agencies and other international organizations are trained. Featuring an "approach of caring for human and natural life" and a "human resources development course for acquiring solution skills," this unique curriculum aims to provide a link between environmental science and public health.

URL <http://ambiente.okayama-u.ac.jp/initiative/index.html>

### ► UNESCO Chair in Research and Education for Sustainable Development at Okayama University

The UNITWIN/UNESCO Chair Programme is a project which was adopted at the 26<sup>th</sup> UNESCO General conference in 1992 to promote education and research activities by all higher education organizations in the university network, and to advise on matters related to the exchange of knowledge across national borders. In order to promote the United Nations Decade of Education for Sustainable Development (2005-2014, DESD), Okayama University filed an application for the establishment of the "UNESCO Chair in Research and Education for Sustainable Development at Okayama University" with UNESCO, which was duly accredited in April 2007. Having its "Development of Environmental Specialists - Program for the Creation of an International ESD Center via the UNESCO Chair (FY2007-FY2009)" successfully chosen as a Partnership Project under MEXT's special education and research grant, a series of ESD projects designed to create a sustainable society are being conducted under the UNESCO Chair at Okayama University through cooperation with other ESD promoting bodies both in and outside of Okayama.

URL <http://www.esd-okayama-u.jp/index.html>

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URL <http://ambiente.okayama-u.ac.jp/index.html>