Preface

Human activities today are increasing at a pace rarely seen in human history. The economies in the West and in developed countries in other parts of the world have continued to grow over the long term because of mass consumption and at the expense of resources and energy. Population growth, urbanization, and economic development likewise have progressed in developing countries, including those in East Asia, at a speed greater than that in the developed countries; consequently, developing countries have had to deal with environmental problems more seriously than developed countries have, including water and air pollution, soil erosion, deforestation, loss of biodiversity, and desertification.

A major characteristic of East Asia is a great discrepancy in income between the developed and the poorest countries, even as the region as a whole is growing, with the developing countries chasing after the developed countries as they step up the rate of their stages of development. East Asia is thriving in certain areas because of international relationships in production, trade, investment, finance, and aid.

Mutual dependency between Japan and East Asia deepened when the East Asian countries opened up their respective economies under various liberalization policies that promoted trade with Japan and acceptance of direct Japanese investment as keys to their economic development strategy. These deepened relationships have engendered high economic growth in this area.

Besides the existing economically mutually dependent relationships, a proposal for new coordination in environmental conservation as an international mission would be significant in terms of the current international situation. Therefore, as a developed country, Japan is expected to play a large role in East Asia regarding environmental problems. Japan possesses an environmental awareness born of its struggles to overcome pollution and its accumulation of rich technical knowledge, funding, human resources, and research for solving problems; and the significance of reinvesting such resources in foreign countries is enormous. International cooperation and coordination in environmental conservation in all of East Asia must be recognized as essential to the stability and development of the region, and the development of a system for fostering such relationships is absolutely necessary.

To solve the environmental problems in East Asia, the regional diversity in geography, climate, history, religion, culture, political state, and economy must be recognized. The environmental sense that is common to the region and that emphasizes harmony with the natural environment must be understood, and strategic solutions as per local characteristics and conditions must be assessed while taking the diversity and commonalities in the region into account. For example, accounting for factors such as local economic, technical, and human resource standards in policy designs and technical selections is important for developing countries. Therefore, it is absolutely necessary to train people who are capable of finding strategic solutions through wide, highly professional knowledge in not only environmental problems but also related fields (i.e., "environmental strategists," which we will discuss later), and to take an academic approach by systematizing East Asia Environmental Studies. Here, we define East Asia Environmental Studies as courses of studies for comprehensively understanding the essence of environmental phenomena in East Asia with the characteristics discussed earlier, and for designing optimal policies and technologies for creating a sustainable, safe, and secure environment.

Kyushu University has a long history in and extensive knowledge of international coordination with East Asian countries because of its geographical advantage, and it has engaged in many environmental studies with a strong awareness of the transboundary damage inflicted by environmental problems from China, the Korean Peninsula, and Southeast Asia. The East Asia Environmental Problem Project that began in September 2007 was a part of Kyushu University's 100th anniversary project, which addressed complex global environmental problems such as air pollution, river and ocean pollution, urban problems, wastes, and food pollution in East Asia, particularly in China, which is undergoing rapid development.

The project was reformed and expanded in April 2009 to the Research Institute for East Asia Environments (RIEAE) with the president of Kyushu University as the head, and it has developed a system for contributing to responses concerning environmental issues in East Asia with education and research.

RIEAE and its researchers aim for social contribution at a national level by solving increasingly complex environmental problems in a practical manner through coordination with relevant institutions. With support from private companies, RIEAE has established 10 research groups, as follows. The "social infrastructure consortium" (urban environment group, low-carbon urban system group, food risk group) works to solve environmental problems caused by urbanization and industrialization; the "environmental symbiosis consortium" (aquatic environment group, anti-desertification group, bioproduction environment group) conducts research for the sustainable and effective use of natural resources without loss of biodiversity; and the "environmental conservation consortium" (air quality group, marine environment group, and environmental chemistry group) and "environmental planning and policy group" research the prevention of environmental pollution

at the local, regional, and trans-boundary levels. In all, 58 researchers are linked to one another and are working on diverse themes in research and education.

Kyushu University has positioned the RIEAE as one of its major projects, and it is funded by the Special Research Budget of the Ministry of Education, Culture, Sports, Science and Technology. The institute was founded initially for research purposes, but as stated earlier, human development is absolutely essential for solving environmental problems. Therefore, the institute began to work on developing human resources and providing the research results to education, which truly took off when the East Asia Environmental Strategist Training Program proposed by the institute was selected for the next 5 years in October 2010 by the Japan Science and Technology Agency (JST) as the International Environment Leaders Training Program.

The East Asia Environmental Strategist Training Program is for the purpose of training international leaders by playing to the strengths of Kyushu University as a leader in East Asian environmental studies. It employs the university's rich human resources and its educational and research facilities, as well as the geographical advantage of being near advanced research institutions such as RIEAE.

International leaders trained through the program are called "environmental strategists." The qualifications for an environmental strategist have been defined as comprising the four following skills:

- Environmental knowledge: has acquired a wide range of knowledge from the social to the natural sciences and can comprehensively and systematically understand the relationship between human activities and environmental problems from various points of view.
- Environmental technology: is able to choose feasible technologies from a menu of environmental measures based on local conditions in a developing country.
- Environmental evaluation: is able to accurately understand the structure of environmental problems, and is thoroughly knowledgeable about tools for assessing environmental load and impacts.
- Environmental strategy: is able to apply solutions with leadership using strategic thinking skills, as well as decision making for solving environmental problems in a consensus formation process.

The major goal of this book is to train environmental strategists, using the essence of the East Asia Environmental Strategist Training Program. Its ultimate objective is to impart a broad knowledge of the environmental problems in East Asia in simple terms so that beginners can comprehensively and systematically understand environmental problems, and to help readers acquire four practical skills for strategic development of solutions: (1) environmental knowledge, (2) environmental technology, (3) environmental evaluation, and (4) environmental strategy.

As mentioned earlier, East Asia Environmental Studies is designed to foster a comprehensive understanding of the essence of social and environmental phenomena in East Asia and to develop optimal policies and technologies for creating a sustainable safe and secure environment. Developing environmental strategists who

can find strategic solutions by using their wide and highly professional knowledge on environmental problems and related fields is inseparable from East Asia Environmental Studies as a whole. Therefore, this book is titled *Basic Studies in Environmental Knowledge*, *Technology*, *Evaluation*, *and Strategy*: *Introduction to Asia Environmental Studies*, and the contents are divided into four essential parts that correspond to the above-named four practical skills required for environmental strategists.

In this book, the authors have attempted to keep the text simple and to limit the explanations to basic concepts in each related field so that the content is understandable both to beginners, such as college undergraduates, and to professionals from different fields. In addition, the book is aimed at providing up-to-date and useful information and research so that it will be useful to front-line researchers and engineers. Part of the book was written by experts on the latest results of their research. We, the editors, would like to thank them for their contributions.

We will be greatly pleased if the book is of any help in solving the environmental problems in East Asia and beyond.

Fukuoka, Japan Takayuki Shimaoka

http://www.springer.com/978-4-431-55817-0

Basic Studies in Environmental Knowledge, Technology, Evaluation, and Strategy
Introduction to East Asia Environmental Studies
Shimaoka, T.; Kuba, T.; Nakayama, H.; Fujita, T.; Horii, N. (Eds.)
2016, XXII, 286 p. 94 illus., 54 illus. in color., Hardcover
ISBN: 978-4-431-55817-0