

## **NATIONAL MECHANISMS AND INTERNATIONAL COOPERATION FOR CAPACITY BUILDING**

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## Summary

Capacity building in terms of environmental education in Japan began in the 1930s when the National Park System was established. Since then, Japan has undergone great political, economic and social change. The objectives of environmental education have changed according to the domestic situation. Environmental sanitation, pollution control and the global environment in turn came into the urgent agenda of environmental management. Along with this change, the audience of environmental education has also been changed. At its inception, environmental education targeted the general public, and then included students in formal education courses. When Japan joined the ranks of industrialized countries after the rapid economic growth which lasted until 1975, training of foreign engineers was included into the mission of environmental education. Today, several organizations are involved in the training of experts from developing countries.

Japanese schemes of capacity building cover a variety of schemes such as formal education or training courses for experts. As for formal education, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) is the responsible governmental entity. It is in charge of the supervision of the formal education system at various levels, from elementary schools to the universities. In addition, there are informal education schemes such as seminars to the general public, and training for local government officers. Japan has various qualifying systems for experts engaged in environmental management. Training courses for the preparation for such qualification tests have been provided to train Japanese experts. As for capacity building of experts from developing countries, Japan International Cooperation Agency (JICA) is the most active and other governmental and non governmental organizations follow.

There are various governmental organizations responsible for capacity building for environmental management. They include Ministry of Environment (MOE), MEXT, and the Ministry of Health, Labor and Welfare (MHLW) etc. As for research institutes, the National Institute for Environmental Studies (NIES) and National Institute of Advanced Industrial Science and Technology (AIST) are major national research institutes. There are also prefectural research institutes, such as the Center for Environmental Science in Saitama Prefecture.

There are numerous governmental and non-governmental organizations which are active in capacity building of experts. Japan Environmental Sanitation Center (ESC), Japan Sewage Works Agency (JSWA) and Japan Education Center for Environmental Sanitation (JECES) are responsible for capacity building in solid waste, sewage treatment, and on-site treatment of wastewater, respectively. Other relevant organizations include Japan Environmental Measurement and Chemical Analysis Association (JEMCA), Energy Conservation Center (ECCJ), Japan Environmental Management Association for Industry (JEMAI) and Japan Consultant Engineer Association (JCEA). As for international cooperation for capacity building, JICA, Japan Overseas Cooperation Volunteers (JOCV), and the Foundation for Advanced Study on International Development (FASID) are responsible. The details of such organizations are described in this chapter.

## **1. Introduction**

Environmental management, globally and locally, will not work without appropriate implementation of capacity building at various levels. For example, training of experts at professional level, formal education at universities to supply young engineers, environmental education to the general public etc. are all equally important. Recently, technology transfer to developing countries gains much significance because recent globalization of economy forces us to face global environmental issues as our common agenda. This contribution discusses how Japan can/should contribute to environmental capacity building.

Environmental education in Japan, in its broad sense, started in 1931 when the National Park System was established. At that time, however, it was hardly prevalent or influential in public thinking, and people generally had no concern about environmental pollution and deterioration, except for a few cases of anti-pollution movements.

After the end of the World War II in 1945, along with rapid growth of the economy, industrialization, urbanization, and social modernization from the middle of the 1950s to the early 1970s, Japan experienced severe environmental pollution and people's awareness of the damage caused by environmental pollution grew rapidly and strongly. It was accepted that basic understanding of the mechanisms of environmental pollution, and its impacts, were essential if it was to be controlled.

In order to teach the necessity of environmental protection, teachers started environmental education, mainly pollution control and nature preservation, at schools. In the research field, many institutes made efforts to find causes and effects of pollution

and its solutions. The national government established environmental training systems to increase the number of experts capable of reducing pollution from industries and public facilities. In the field of international cooperation, a few organizations had started environmental training for experts from developing countries.

In 1973 and 1975, two world oil crises severely hit the Japanese economy. The experience of the two oil crises caused dramatic changes in energy consumption and industrial structure. Even during the slowdown of economic growth, people's concern about the environment in general became stronger than before. During the late 1970s and early 1980s, schools, universities and environmental training institutions took various initiatives for environmental education and training. In this period, the concept of the environment expanded from pollution to the wider environment.

In the late 1980s, global environmental issues like ozone layer depletion and global warming were raised as urgent issues for action under an international cooperation program. In accordance with the United Nations Conference on Environment and Development at Rio de Janeiro in 1992, the Japanese people also started paying much attention to the global environment.

The national government started an initiative of environmental education. Many research institutions started global environmental studies. Environmental education at schools had been promoted such as by giving teaching training to teachers in collaboration with universities. As for international cooperation, the number of organizations carrying out environmental training had increased. Some organizations started training courses on global environmental problems such as ozone layer protection and prevention of global warming.

Since the middle of the 1990s, Japan has further encouraged environmental education and training. At schools, the "comprehensive learning" program that is aimed at teaching environmental subjects in each related subject instead of teaching only in science or social studies, will begin in 2002. Environmental international cooperation has expanded more and more, because Japan considers environmental protection as an important issue for the next generation.

## **2. General Scheme of Capacity Building in Japan**

In Japan, various entities are involved in capacity building. Figure 1 shows the main actors and their roles for capacity building. Each sector has an interactive relationship to other sectors, and this helps to improve capacity building in each sector.

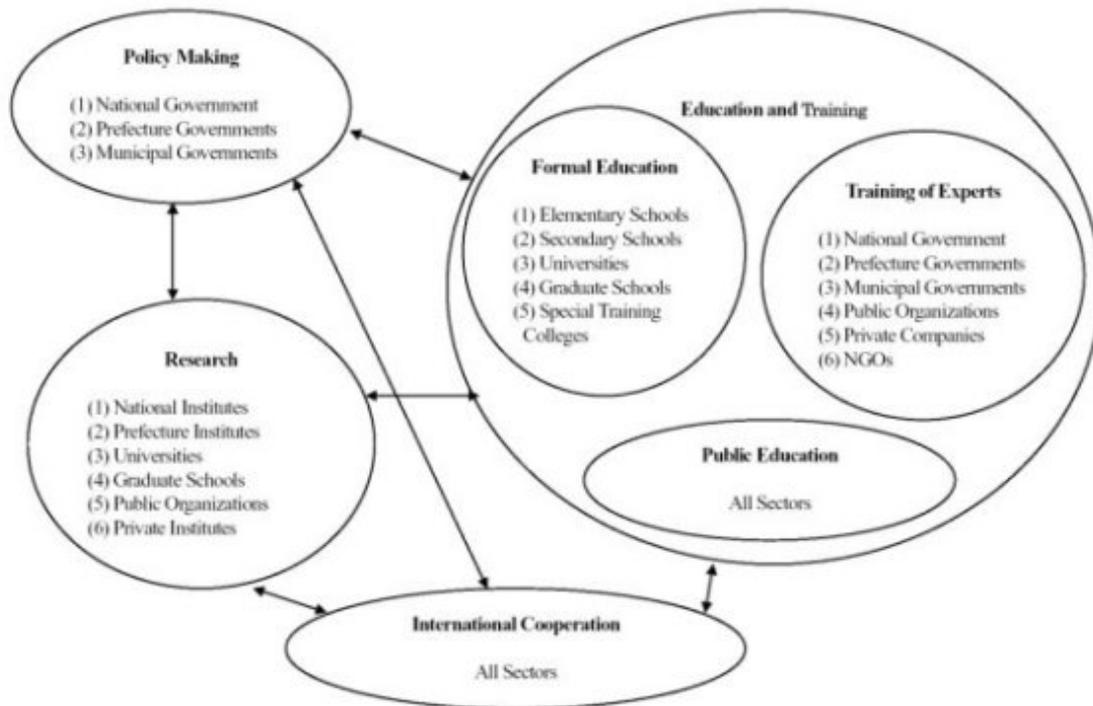


Figure 1. Main Actors and their Roles for Capacity Building in Japan

The role of the national government on capacity building is to make policies and promote or implement capacity building in various ways. In Japan, the necessity of environmental education and its promotion are stated in the Basic Environment Law established in 1993. The national government takes various measures to carry out and promote environmental education in many sectors. For example, in the formal education sector, the national government provides environmental teaching training to teachers with universities. As for environmental education to the public, the national government holds seminars and festivals to increase public awareness. The national government also publishes many environmental documents and reports, and most of those data are available on the Internet. The national government provides environmental training to local governmental officers and researchers to increase their environmental capabilities. As for environmental training to private companies, the national government requires companies to assign managers for pollution prevention. Usually, those managers have to study and pass examinations organized by governmental organizations. The national government promotes research not only on domestic environmental problems but also international environmental issues. Results of research are used in policy-making and countermeasures. These results are also available to the public. The national government puts an emphasis on international cooperation for capacity building. It offers a lot of environmental management training, especially to civil servants and engineers from developing countries.

Prefectural and municipal governments (local governments) make their policies on capacity building and implement them in their own jurisdictions. For example, Kanagawa Prefecture, one of the 47 prefectural governments, was the first local government to establish a Local Agenda 21. In its Local Agenda, Kanagawa

Prefecture declares the promotion of environmental education as one of their priority actions. Other local governments also promote environmental education in various ways. For example, Sapporo City, one of the biggest municipal governments in Japan, publishes environmental textbooks for elementary school students and distributes them free of charge. Kawaguchi City, one of the leading municipalities for waste recycling, uses its mascot called Gomi-maru (meaning 'no waste') to increase public awareness for waste problems. The City uses Gomi-maru at environmental festivals or events, and citizens, especially children, learn the importance of waste recycling through playing with Gomi-maru. As for international cooperation, some local governments offer environmental management training to officers and engineers from developing countries. All local governments contribute to international cooperation in one way or another.

Research has important roles for capacity building in order to increase researcher abilities for environment. In Japan, research is conducted in various sectors including national, prefecture and municipal institutes, universities, graduate schools, public organizations, and private institutes.

The national institutes conduct research on regional, sub-regional, national and international environmental problems. They do also joint research with other institutions not only in Japan but also in other countries. Prefecture and municipal institutes carry out environmental research in their own jurisdictions basically, but some of them also conduct international environmental studies. At universities and graduate schools, various environmental studies are conducted. At public organizations and private institutes, specific environmental research is conducted.

Education and training has the most important roles for capacity building. In Japan, three sectors are actively involved in environmental education and training: formal education, organizations that offer training for experts and organizations that provide environmental education to the public. In formal education, environmental education is available for elementary school pupils up to graduate school students. At elementary schools, lower grade pupils start learning about the environment. In order to make students familiar with the environment, teachers teach pupils about the environment near their schools or in their locality. Pupils also learn about domestic environmental issues such as municipal solid waste management through visiting incineration plants and landfill sites. There are many universities and graduate schools that offer environmental subjects in Japan, and their number has increased year by year. But, most of the subjects are related to environmental engineering or science, and environmental politics or environmental economics courses are still few in number. Training for experts is carried out mostly in the following sectors: national government, public organizations and NGOs. Usually, experts learn technical knowledge or skills on environmental management in their workplaces. But, in order to attain higher skills or qualifications, they attend training programs that are usually organized by governmental bodies or public organizations. The learning period and skill levels differ among the programs, but most of the programs require experts to pass examinations in order to obtain qualifications. Environmental education for the public is conducted by all sectors. The main actors in public environmental education are governments and public organizations, but there are some private companies that contribute to public environmental education. For example, NEC Kyushu, one of the leading manufactures

for large-scale integrations (LSIs) holds an environmental festival to enhance understanding its environmental management activities among its employees, their families and local residents. At this festival, environmental seminars and exhibitions are held and demonstrations, such as paper making from kenaf, is also conducted (see *Education, Public Awareness, and Training in Japan*).

International environmental cooperation is carried out in all sectors, but one of the major actors is the Japan International Cooperation Agency (JICA). JICA implements more than 400 group training courses for trainees from developing countries per year, and about 100 of them are related to the environment. JICA cannot carry out all those training courses by itself, so governments, institutes, universities, public organizations, and private companies cooperate to implement the training.

### 3. Governmental Organizations for Capacity Building

#### 3.1. General

The Japanese government reformed in January 2001 and a number of ministries and agencies were merged into 13 ministries and agencies. Figure 2 shows the structure of the new government. In this sub-section, some of ministries in charge of environmental capacity building are introduced.

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#### Bibliography

Association of International Education, Japan (2002). *Index of Majors* [This book classifies universities and colleges by majors]

Center for Environmental Science in Saitama, Japan (2000). *Center for Environmental Science in Saitama*, 1-27pp.) [This brochure introduces the activities of Center for Environmental Science in Saitama, Japan]

Environment Agency (2000). *Environmental Education*, 1-7 pp. Textbook for Environmental Administration. JICA. [This textbook presents environmental education in Japan and the role of Environment Agency for environmental education]

Foundation for Advanced Studies on International Development (1994). *Directory of Japanese Institutions in Development Assistance*.

Gakken (2000). *Guidebook for Qualification of Nature and Environment* (in Japanese), 130-178 pp. [This book introduces the environmental qualification system in Japan]

Global Environmental Forum (1994), *Environmental Data 1993/1994*.  
[This data book gives comprehensive idea of the world's environment]

Institute of Administrative Management (1994). *Organization of the Government of Japan*.

Japan Certified Engineer Association (1999 and 2001). *System of Certified Engineer* (in Japanese), 2-5

pp.

Japan Environmental Sanitation Center (1997). *JESC Guide*, 2 pp.

Japan International Cooperation Agency. *Annual Report of Japan International Cooperation Agency in the FY 1999* (in Japanese). [This report presents the activities of Japan International Cooperation Agency in the FY 1999]

Japan International Cooperation Agency. *Global Issue <Environment>* (in Japanese). [This paper shows the number of environmental management training courses by Japan International Cooperation Agency]

Japan International Cooperation Agency. *Outline of Group and General Specific Courses in the FY 2000* (in Japanese).

Japan Sewage Works Association (1995). *Sewage Works in Japan*. [This yearbook gives comprehensive data on Japanese sewage works as well as special topics related with sewage system]

Kitawaki H. (1996). *Japan's Approach to the Environmental Education of Engineers, APEC Workshop on Directions for Better Environmentally Educated Engineers in the APEC Region*, 77-84 pp. Science & Technology Policy Institute, Republic of Korea.

Kozawa K. *Trends in Environmental Education in Japan*.

Ministry of the Environment. *National Environmental Training Institute*, 1-17 pp. [This brochure introduces the activities of National Environmental Training Institute]

United Nations University and Environment Agency of Japan. *Global Environment Information Center*. [This brochure introduces the outline of Global Environment Information Center]

### **Biographical Sketches**

**Ms. Hisako Omagari** is a training program organizer in the field of environmental management. She graduated from the Sagami Women's University, Japan and joined the Japan Environmental Sanitation Center (JESC) in 1992. After working at the JESC for three years, she entered the graduate school of the University of Sussex, U.K. and obtained a master's degree in Environment, Development and Policy in 1997. After finishing her study in U.K., she has continued her carrier in the field of environmental management training at the JESC. Currently, she engages in the environmental management training courses for people from developing countries, with the Japan International Cooperation Agency (JICA). The training courses include solid waste management, environmental administration, water quality monitoring, ozone layer protection and air quality management.

**Dr. Hidetoshi Kitawaki** is professor of regional development studies at Toyo University, Itakura Campus, Japan. He received his master's degree and PhD in engineering at Tokyo University, Japan. In 1984, he joined a Japanese consulting firm and engaged in international cooperation on solid waste management and sewage works. From 1990, he joined World Health Organization (Geneva) and was in charge of environmental health management. He returned to Tokyo University as a visiting associate professor in 1992 and moved to Toyo University in 1996. He leads Japan in the study of appropriate technology for water supply and sanitation. He has been involved in numerous official development assistance projects in environmental management sponsored by JICA and other aid agencies including non governmental organizations etc.

**Dr. Tomonori Matsuo** is professor of regional development studies at Toyo University, Itakura Campus, Japan. He received his master's degree and PhD in engineering at Tokyo University, Japan. In 1966 he started his research carrier at the Department of Urban Engineering in the same university and was promoted to Professor of Environmental Engineering at the Department in 1982. He moved to the Department of Regional Development Studies, Tokyo University in April 2000. His major research fields are biological wastewater treatment, metabolic and energy systems in urban area, and environmental management. He is very actively involved in the International Association on Water Quality (IAWQ) and was Vice President of the Association from 1994 to 1998. He was nominated as an Honorary Member of the International Water Association (IWA) in 2000. He is also working as a member to many advisory councils and committees of national and local governments in Japan.